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Novel Mode of Rolling Thin Iron Plates.

THIN iron plates have been manufactured in Belgium and Germany for some time by a new method to which the name of *Calmotérie* has been given. According to *La Revue Industrielle*, from which the following account is taken, the process is a very remunerative one: With two heating furnaces and a set of rolls, about 6,000 plates, from 1 to 3½ millimeters (·039 to ·138 inches) in thickness, weighing 15 to 30 kilogrammes (33 to 66 lb.) have been turned out every month. The piles are made up of 35 per cent. of old rails with 65 per cent. of scrap iron in the interior; they are transformed into plates at a single heat, without again going into the furnace.

The mill consists of a pair of gauge rolls, a pair of roughing rolls, and a pair of finishing rolls. The first groove of the first pair is so constructed that the bloom receives a pressure as uniformly distributed over its surface as possible, so as to effect a perfect welding; the bloom is made in the form of a wedge, so as to facilitate its entrance. The second groove reduces the slab by one-fifth of its breadth, for the purpose of increasing the solidity of the iron, and of avoiding ragged edges. Next come four smooth rolls, the space between them being 70, 50, 30, and 20 millimeters (approximately 2¾ inches, 2 inches, 1 3-16ths, and ¾ inches) which draw out the slab into a bar, varying in thickness with the intended dimensions of the plates; for those of 1 to 1½ millimeters (·039 to ·059 inch) it is 20 millimeters, (¾ inch), and for those of greater thickness, 30 millimeters (1 3-16ths inch). The bar thus obtained has a breadth of about 170 millimeters (6¼ inches) and a length varying from 13 to 16 decimeters (4 feet 3 inches to 5 feet 3 inches); this is cut in two by means of shears worked off an eccentric keyed on to the coupling box of the upper roughing roll. These two lengths are each destined to become a plate; to this end, they are passed between preliminary rolls, which are 125 centimeters (4 feet 1 3-16ths inch) long, and are provided with an adjustment which permits of the bars being reduced, in five or six passes, into plates 65 centimeters (2 feet 1½ inches) in length. The upper roll is counterbalanced as carefully as possible, so as not to strain the adjusting screws, which are thus easily worked.

The finishing is effected by the aid of chilled rolls 125 centimeters (4 feet 1¼ inches) long. After three or four passes, those plates which are intended to have but a slight thickness are placed one upon another, and in five or six more passes, are reduced to the desired gauge. The rolls are 65 centimeters (2 feet 1½ inches) in diameter, and make fifty-five revolutions per minute, the engine being of 100 to 120 horse-power.

All the work is done, as we have already said, at a single heat and without the aid of a re-heating furnace; this it is which constitutes the great economy of the manufacture. The piles weigh from 35 to 75 kilogrammes (77 to 165 lb.) according to the dimensions of the plates required; but their weight is kept within the latter figure for ease of handling. Their breadth is a little less than the length of the roughing rolls; their thickness, previously reduced by a screw press, is 16 centimeters (about 6¼ inches) at the front end, and from 20 centimeters (about 7¾ inches) at the back end; the length varying from 55 to 85 centimeters (21 to 33 inches). The wedge form of the blooms facilitates their being gripped by the rolls at the same time that it permits of the slag running off more freely, since the hinder portion is less solid.

The rough-rolled iron which forms the outside is as thin as possible so as to keep down the expense of the raw product; its minimum thickness is about 16 centimeters (6¼ inches) a figure arrived at in practice. It is as well not to reduce the thickness below this amount for fear of cracks at the edges, which would lead to too much waste.

The heating furnace is constructed so as to bring the iron to a uniform temperature throughout its whole substance; the Boetius arrangement lends itself best to this kind of work. The following are the dimensions of a furnace actually in use:—

Length of sole, 250 centimeters (8 feet 2½ inches); breadth, 150 centimeters (4 feet 11 inches).

Length of firegrate, 95 centimeters (3 feet 1½ inches); breadth, 40 centimeters (15¾ inches).

Height of bridge, 75 centimeters (2 feet 5½ inches; length, 1½ meter (nearly 5 feet).

Height of vault, 65 centimeters (2 feet 1¼ inches), which diminishes from the door to the lunette, where it is reduced to 30 centimeters (nearly 1 foot). The breadth of the lunette is 48 centimeters (1 foot 6¾ inches).

The air necessary to the combustion enters by the passages left in the brickwork of the hearth and bridge, and the different currents mingle in the vault, the end of which is also provided with air passages. The air cools the bridge and the sides of the hearth, and, after being heated, escapes near the sole by two rows of vertical apertures, finally mixing there with the products of combustion. It enters with a considerable speed, on account of the outer pressure and the draught; dampers fixed outside the orifices permit of this speed being regulated.

Seven to eight charges are made in a day, and each charge is composed of thirteen to seventeen piles. About 21 quintals (2 tons) of good coal are required for every twelve hours. The waste heat of two furnaces is made to fire a 50 horse-power boiler.

The furnaces should be erected as near as possible to the roll-train, and the finishing rolls near the engine, inasmuch as they require the greatest amount of power.

The hands required for a roll-train are—one foreman over the finishing rolls, one man to the roughing mills, two boys for cutting the bars, and two boys to help the foreman and man above-mentioned. The furnace is worked by three men and a laborer; there are, therefore, altogether for the two furnaces and one roll-train, nine skilled and five unskilled operatives.

Topographical Surveying and Keeping Survey Notes.*

BY RICHARD P. ROTHWELL, C.E., M.E.

THE communication which I have to lay before my fellow members of the Institute, is no elaborate paper, nor the statement of any great discovery; it is simply the record of convenient methods of conducting topographical surveys, and of keeping the notes of the same; methods that have grown out of practical experience, and have saved me many a day's labor by facilitating office and field work, and at the same time secure a greater degree of accuracy than is obtained by the methods now in general use.

I assume it as granted that no topographical map is worthy of the name, except it represent the elevations and depressions of the surface by means of horizontal or contour lines.

In the Ordinance Survey of Great Britain, the contour lines are traced for every fifty feet vertical height, I believe, by running out the line with level and compass through all it is meanderings on the surface; this, of course, is a very tedious, though accurate, process, but "in the woods," where many of our surveys have to be made, it would be practically impossible.

Some time ago, I made an extensive and quite elaborate topographical survey and contour map of the southern portion of the Cahaba coal field, in Alabama, the object of the survey being to determine the best route for a railroad to enter the coal field, and open that portion of it where the quality of the coal and the size of the beds made it desirable to open mines. The country is greatly broken by ridges and valleys running in every direction, so that it is exceedingly difficult to select the *best line* in all respects, for, while it is easy enough to find the best place to cross any one ridge, it is by no means easy to find the line that, though perhaps not the best in crossing any one obstruction, will yet give the best mean results. This could only be done by having a complete contour map of the district, such a map being also essential to the intelligent selection of the best point at which to open mines.

As many of the engineers present know, the financial limits set to such work are, in this country, and especially in the south, very restricted. We have to combine speed and economy with accuracy in such work.

The State of Alabama has its lands divided up into Townships, Ranges and Sections, by lines running north and south and east and west. I made these section lines, one mile apart, the main lines of my survey, and ran them in some cases with the Transit, reading both deflections and needle back and fore sights, and in other cases simply with the surveyor's compass. In the total absence of any magnetic attraction I prefer the compass. My distances were most carefully measured, with either a brazed link steel chain or with a steel tape, and a stake was driven every hundred feet. These stakes were at least eighteen inches high (so as to be easily found in the brushwood), and were marked as in railroad work, the distance on one side, and at all desirable points with the elevation above tidewater on the other side. Thus X. 87+50 marked on the front of the stake, and 735.62 on the opposite side being X. line station, 8,750 feet from

*A paper read before the American Institute of Mining Engineers at Hazleton, October, 1874.

the starting point, and the elevation of the surface at this point is 735.62 feet above the sea. The levelling is done carefully, and checked by cross lines. These section lines are approximately North and South and East and West, though not quite straight nor uniform in their variation, owing to errors in the original survey.

This survey is tabled by latitudes and departures, and can thus be plotted on ordinary cross-section paper, without the use of protractors. The lines on the paper being taken as magnetic meridians and east and west lines.

The notes of section lines are kept in the manner prescribed by law. The level man as he runs over them, if thought desirable, sketches in the contour of the surface for a few hundred feet on each side of his line; this, however, is not necessary, as the work is done in a subsequent operation.

We now assume some convenient corner as a zero, or starting point, plot in the section lines on the cross section paper, by latitudes and departures, taking the lines on the paper as magnetic meridians and east and west lines. Those passing through the starting point are the zero meridian and zero east and west line. If we make our map, and the note books, on the scale of 500 feet to the inch (a very convenient scale in extensive surveys), every tenth line (heavy lines) on the paper will be marked as we recede from the zero lines, thus: 5 E., 10 E., 15 E.; 5 W., 10 W., 15 W., etc.; 5 S., 10 S., etc.; so that any point in the district may be designated by a name which indicates, without a moment's consideration, exactly where it comes on the map; thus 65 E., 15 N. is a point 6500 feet to the east and 1500 feet to the north of the zero point of the survey.

To get the topography, I run lines 500 feet apart, either North and South or East and West, but not in both directions over the same ground. These lines commence at some station on the section lines, and are run due North and South or East and West on the 500 feet lines. They are run with the pocket compass and steel tape or chain, and with the Locke pocket level. These lines close on the section lines, and a check is thus given to the work at intervals of one mile; as the section lines are staked every 100 feet, and the elevation marked on the stakes, the check is perfect and immediately applied, for when commencing the line the man in charge knows exactly when he should intersect the next section line. If he does not strike this point, he can at once verify his work.

With careful work, the variation in direction of the line run a mile with the pocket compass will never exceed 10 ft., and will generally be within 5 ft., either of which is as close as we can plat on the scale used. The levels run over these compass lines with the pocket or Locke level will seldom vary 5 ft. in running a mile over rough ground, errors balancing; and as they check up on the section lines every mile, this error can be reduced to say 2½ ft. midway between the section lines.

The notes of the survey are kept in a note-book made of X section paper ruled the same on both sides.

We write from bottom up. Thus we will write at foot of page:

"*Running line* 17 *N.*"—We see at once the line being run is an east and west line, at 1700 ft. north of the Zero E. and W. line; we commence at, say, "35 E." on this line—that is, at a point 3500 ft. east and 1700 ft. north of the Zero or initial station of the survey. We know, without looking to another line, exactly where our starting point is on the map, and can, without a moment's hesitation, point it out.

After running 500 ft., we find the station is 40 *E.*, so that the line is being run *east*; the topography is sketched on as the work proceeds, the field-book in scale and fullness being a finished map, the final map being merely the transfer on to a single sheet, in a better style, of the several pages of the note-book.

The surveying party consists usually of but five persons, three of whom may be green boys.

1st. Axe-man, who is also flag-man.
2nd. Compass-man.
3rd. Front chain-man.
4th. Level-man, who is also rear chain-man.
5th. Rod-man.

If the timber is thick, it may require a second axe-man to be able to clear the line as fast as the level-man can get his notes and sketch in the topography.

The advantages of this manner of conducting a survey are speed, economy, and *accuracy*, for no error can extend beyond a mile, and the notes are all made and map finished *on the ground* with every feature before the eyes of the draftsman, so that if his work be not correct, he knows it at once before leaving the field, and can seek and find the error with but little loss of time.

At night, and during wet days, the work is all "posted up" on sheets of cross-section paper, so that the entire map is complete before leaving the camp, and, in fact, each day's work is complete in itself; and if the survey be suddenly interrupted, as was that to which I referred above, none of it is lost, but it can at any future time be taken up just where it was left off without any difficulty. The notes do not need the presence of the man who made them to interpret them, as is not unfrequently the case, and tell where his line comes on the map; for each page tells itself exactly where it belongs, and as it is itself the complete original of the map containing every contour and feature of the surface, as sketched and figured on the spot, it leaves nothing to the artist's imagination.

The rate at which a party, such as above enumerated, will run out and level these secondary lines depends on the nature of the country. In broken ground, where the brushwood is not too thick, from 7000 to 15,000 ft. of line per day can be run, putting in contour lines every 10 ft. vertical, and sketching for about 300 ft. on each side of the line. If the lines are run 500 ft. apart, this allows an overlap of 50 ft., which serves as a check in bringing the work together on the sheets. The thousand little practical details that facilitate the work, and which suggest themselves naturally to the engineer in the field, are not here mentioned; it is sufficient to call attention to the general outline of the method, and to say that its practical usefulness has been fully proved, for it has been the outgrowth of an extensive experience.

DISCUSSION.

Mr. J. FULTON—I cordially recommend Mr. ROTHWELL'S method of making and recording topographical field-work. I have, in my practice, followed nearly the same plan, and believe it to be efficient, simple, and not liable to produce confusion or lead to errors. The value to the geologist and mining engineer of correct contour topographical maps is becoming more and more appreciated, and any contribution to this department is especially valuable in inducing harmony in the method of work and uniformity in the maps.

Metal and Mineral Review of the Pacific Coast.

From the San Francisco *Commercial Herald.*

Imports.	1873.	1874.	Imports.	1873.	1874.
Iron, Pig, tons	8,125	8,465			
Bar, bars	206,802	118,571	Tin Plate, bxs	50,891	80,253
Plate, pcs	13 248	21,641	Steel, cs	1,409	2,171
Var's, bdls	15 049	2,418	bdls	7,767	11,246
cs	792	771	Sheathing Metal, cs	894	775
pcs	15,100	1,396			

Iron. In regard to the traffic in Pig IRON, we cannot do better than to print entire the annual circular of WM. J. FFRAY, made up for the year ending December 31st., 1874. "The monthly quotations given below will show a marked fluctuation during the year. The extremely low prices in May were caused by a forced sale of 600 tons of different brands, which were offered on the market for over two months, causing a decline from $45 to $35 per ton. Upon the disposition of this the market rallied and gradually advanced. The consumption this year shows an excess of 5,694 tons over 1873, caused by extensive buildings being erected here, and large quantities of mining machinery being shipped inland. The importations as shown below vary but little from 1873. Oregon has shipped to San Francisco 1,404 tons of soft iron of home production. This iron is said to be improving in quality. There have also been large importations of American soft iron during the year, the consumption of which some of the leading foundrymen favor very much. There has also been melted during the year about 600 tons of shot and shell, not enumerated in the annual consumption below of pig iron. Large purchases of Scotish iron have been made "to arrive" for 1875 delivery, at from $38 50 to $45 per ton for soft, and $36 to $43 for white. American soft has been sold at $40 to $43 50 per ton "to arrive," already en route. The *Colombo*, from Greenock, is at hand with 250 tons Scotch pig iron.

"Tin plate is a drug on the market, and the price entirely nomical. Australian block tin is slow of sale, at prices barely covering cost of importation.

"I find the stock of pig iron on hand January 1st, 1875, in all 1,384 tons soft, and 197 tons white, as per statement below, being 6,402 tons less than the stock on hand January 1st, 1874. Stock of pig iron on hand January 1st, 1874, 7,786 tons; importations of 1874 (Scotch soft, 4,703 tons; Scotch white, 260 tons; American soft, 1,447 tons; American white, 400 tons; Oregon soft, 1,404 tons; American gray, 200 tons;), 8,414 tons—total, 16,200 tons. Detailed account of stock on hand January 1st, 1875: In importers' hands—Scotch and American soft, none; Scotch and American white, none. In foundrymen's and jobbers' hands—Scotch soft, 987 tons; American soft, 200 tons; Scotch white, 97 tons; American white, 100 tons—1,384 tons. Consumption of 1874—white, 2,003; soft, 12,813—total, 14,816 tons. The above synopsis shows the consumption of 1874 to be 5,694 tons in excess of 1873, and the importations of the year to be only 77 tons more."

Selby Smelting Works of San Francisco.—During the year there have been turned out at the Selby Smelting Works, in San Francisco, something like 10,000 tons of pig Lead. Of this, about 8,000 tons have been exported to New York, the ballance having been made into shot, pipe, and sheet lead, at the establishment devoted to the manufacture of these articles in this city, or absorbed by other home demands. The Selby Smelting Works, which are very extensive, well appointed, and as ably administered as any, perhaps, in the world, have been kept employed up to their fullest capacity, notwithstanding they underwent a material enlargement only a few years ago. In view of the greatly increased quantity of lead and silver bullion that is likely to be turned out on this coast hereafter, these works will probably require soon to be further extended. During the year 1874, about 6,500 tons of base bullion were turned out by the furnaces of Inyo County, nearly all of which was sent to San Francisco, and sold to the Selby smelting works at an average price of about $115 per ton. These works also obtained some base bullion from Eureka, Nev., and other points on the coast, the value of the Eureka produce being more than twice as great as that from Inyo, in consequence of its containing more silver, and also a considerable percentage of gold, the Inyo bullion carrying scarcely any of the latter metal. The Eureka base bullion, or, as it is sometimes termed, impure lead, contains from $250@400 per ton of the precious metals, while that of Utah ranges from $20@75 in gold, and from $90@103 in silver to the ton. Very little of the latter comes to this city, nearly the whole of it being sent East, and sold to the smelting establishments of Chicago, Boston, and Newark. The furnacemen of California and Nevada, after trying foreign markets, came to the conclusion several years since that they could do better with their base bullion in San Francisco than anywhere else. At the

Selby Works, smelting ores, as well as crude bullion, are purchased; but fewer invoices of this class of ores reach this city than formerly, owing to more smelting furnaces being erected in the interior.

Quicksilver.—The exports to the different countries for 1874, and the three previous years, were as follows:

To	1871.	1872.	1873.	1874.
New York	800	1,202	....	315
China	7,900	4.810	1,900	1,200
Mexico	3,081	5,038	3,761	4,104
South America	2,200	1,300	508	738
Australia	1,100	643	105	100
British Columbia	6	2	11	2
Other Countries	118	103	74	311
Total flasks	15,205	13,098	6,359	6,770

The market, during 1874, has been a constantly advancing one. Opening in January at $1 20 per lb., it advanced in February to $1 25, on the 1st of May to $1 30, on the 15th of May to $1 35, August 6th, to $1 40, September 3d, to $1 45, October 25th, to $1 50, and finally, November 25th, 1874, to $1 55, at which price it closed. During November, while the price was $1 50, a contract was concluded between FLOOD & O'BRIEN (for use at the Consolidated Virginia mine), and the Redington Quicksilver Company, for four hundred flasks per month for one year. This illustrates the enormous amounts of the article consumed by our leading mines, and even this quantity will fall considerably short of this year's requirements of the mine in question. The cause of these steady advances in price has been the great scarcity in London and its rapid advance there, where, from £20 per flask in January, 1874, it went steadily up until, in November, 1874, it reached £25@£26, the market at one time being almost entirely out of stock. This fact has forced foreign orders to this market which were previously sent to London, and absolutely compelled an advance to a parity with the current London price in order to protect our local consumption requirements. The production of the three leading mines, viz, the New Almaden, the New Idria and the Redington, has shown no very great variation from that of 1873, except in the case of the Redington, which has produced during the year 7,200 flasks, an increase of 3,000 flasks over 1873, averaging about 800 flasks per month during the last half of the current year. It gives promise of a still further increase of product during 1875, having just completed a third new continuous furnace, and having a fourth now under construction. This company will thus, within thirty days, have three furnaces in operation (each with a capacity of 24 tons daily), and about April 1st, 1875, they will have four such furnaces in operation, and may be expected to produce thereafter about 1,200 flasks per month. The development of their mine has fully kept pace with this increase of their reduction capacity, and affords a guarantee of an ample supply of ore to keep all their reduction works busily employed. Besides paying the large outlay for new construction works, this mine has paid its owners continuous dividends through the year, at the monthly rate of $30 per share, (the capital stock being $1,260,000, in 1,260 shares of one thousand dollars each), so that it fairly now stands as the leading quicksilver mine of the coast. The very high prices ruling for the article throughout the year have of course stimulated great efforts to open new mines, and hundreds of them have been located and worked with various degrees of energy. It is singular, however, that so little has as yet really been accomplished towards augmenting the product of the article, the total product of all the new mines throughout the year not having exceeded 500 flasks per month, while a fully equivalent increase in the consumption requirements of the coast has been manifest, and present indications in mining developments on the Comstock ledge and elsewhere point to an even larger increase in consumption during 1875. It can hardly, however, fail to prove that some of the many mines now being prospected will develop into mines of more or less considerable yield, during the coming year. The future price of the article depends entirely upon such new supplies. It is already certain that for the next four months no large increase of product from new mines need be expected, and that, therefore, no change in price is likely to take place. With the opening of Spring, however, there will be greater facility of operating new and only partially equipped mines, and it will be strange if new supplies do not flow into the market from new sources. Upon the abundance of such supplies depends the future price of the article. No market in the world has any surplus, while, as before said, the new gold and silver mining developments of the coast make it certain that at least 500 flasks per month additional will be required for local consumption during 1875. Up to this quantity, then, the market can readily take increased production without accumulating stock. Any increase beyond this quantity would probably lead to accumulation of stock which would either seek an export outlet or be forced on the local market at a decline, the extent of which decline would be entirely in proportion to the quantity of increased product offered. We cannot dismiss the subject without alluding briefly to the Borax Lake sulphur quicksilver mine, which is developing very rich cinnabar ore, and its management looks forward with confidence to large productive supply in the near future.

Coal.—The following gives the comparative imports for—

FOREIGN.	1873. tons.	1874. tons.	Increase. tons.	Decrease. tons.
Australian	96,435	139,109	42,674	....
English	52,616	37,826	....	14,790
Vancouver	31,435	51,017	19,582	....
Chili	400	....	....	400
Japan	50	....	....	50
EASTERN.				
Anthracite	18,295	14,263	....	4,032
Cumberland	8,857	15,475	6 618	....
DOMESTIC.				
Mt. Diablo	171,741	206,255	34,514	....
Coos Bay	38,066	44,857	6,791	....
Bellingham Bay	21,211	13,685	....	7,526
Seattle	13,572	9,027	....	4,545
Rocky Mountain	1,904	433	....	1,471
Totals	454 582	531,947	110,179	32,814
Increase, 1874	77,365	....	....	....

Specified on the way from Domestic Atlantic ports, December 31,

	1870.	1871.	1872.	1873.	1874.
Tons	2,464	3,679	3,799	5,694	7,632
Casks	890	885	819	200	506

	1870. tons	1871. tons.	1872. tons.	1873. tons.	1874. tons.	totals.
Foreign	135,168	113 483	174,212	180 936	227,952	831 751
Eastern	30,820	13,291	29 659	27,152	29,738	130,670
Domestic	167,183	188 420	230 586	246,494	274,257	1,106,940
Total	333,171	315 194	434,467	454,582	531,947	2,069,361

The table annexed of Imports of Eastern Anthracite and Cumberland, including Bituminous from Sydney and elsewhere, is so full and comprehensive as to leave little space for comment. The total supplies from all quarters show a very considerable increase over that of the year preceding, and yet the consumption has more than equalled the excess, leaving comparatively no stock in first hands worthy of note, notwithstanding the heavy receipts from Coast mines. The fact is, the heavy supplies from the Black Diamond and other California mines have kept prices in check and prevented the importers from realizing any considerable profit upon their ventures. In fact, the business of importing coal this year has, as an entirety, been devoid of profit. There is, however, a prospect of a change in values ere long, owing to lessened shipments to this coast from the Colonies. New mines are being opened on this coast that give promise of great value in the near future, and some being on the line of the Central Pacific railway are of great pecuniary value. We allude particularly to the Lincoln. The Rocky Mountain mine now contributes freely to the railroads while the Mt. Diablo mines go far to supply steam power for inland steamers and factories. The Renton Coal Co. is a new mine, located near Seattle, W. T., its first shipment arriving in June; up to the first of January 3,000 tons have been received, its production is now 1,500 tons monthly. During the last six months this company has built a steamer, 5 barges, 2½ miles railroad, 25 houses for workmen, a saw-mill, blacksmith shop, hotel, store, etc. The company expect to market this year 25,000 tons. The coal is supplied to stockholders in this city and Oakland, ex ship, at $8 per ton. In regard to the Coos Bay mines, we remark that the Eastport and Newport mines have furnished for this market, the past year, about 45,000 tons, with facilities for greatly increasing their output at any time, which they have not felt justified in doing while the market was as overstocked with foreign coals as it has been the past season. The Eastport company have completed a drain tunnel extending through the coal 2500 feet, and have nearly finished new trestle work and bunkers at the landing, which will enable them to load their steamers on one tide, and increase the number of trips one-half. At the opening of the year the price of Coos Bay was $11, since then a uniform price of $10 per ton ex ship has ruled. Two steamers, the *Eastport* and *Empire*, continue to run regularly to and from Coos Bay, besides a line of sailing vessels constantly employed in the trade. Coos Bay enters largely into the household trade of this city. The old "Nanaimo" mines of British Columbia, have yielded liberally during the year, past, and since September last a mine, the "Wellington," has contributed some 12,000 tons to our supply, finding ready sale, all being of good quality for household purposes, price $11, ex ship. The resident agents say they hope to receive a monthly supply of 4000 tons Wellington during 1875.

The price of Bellingham Bay ex ship is $8 50, and it enters extensively into local use for families. The Gas Company is a large consumer of Nanaimo, etc. Cumberland is in excessive supply, the stock very large and prices low. The stock of anthracite is proportionately less than that of any other kind, and yet the traffic during 1874 was not profitable to the importers. Scotch and English steam coals rule low, and altogether the past year's business was unsatisfactory, besides, some dozen coal-laden ships have been destroyed by fire at sea, all for want of proper ventilation. Mt. Diablo coal sells at $8 25 for coarse and $6 25 for screenings, the latter used very extensively by factories. Imports during the week embrace the following cargoes: Monmouthshire, from Liverpool, 1385 tons; *Valley Forge*, from same, 1255 tons; *Baltic*, from same, 2500 tons; *Colombo*, from Greenock, 1500 tons; *John Kerr*, from Newcastle, N. S. W., 2500 tons; *Portia*, 1750 tons. From New York—*Radiant*, 440 tons, etc. Recent sales of Sydney cargoes may be noted at $10@$10 25. Our receipts of anthracite from New York and Boston for the year 1874 were 14,263 tons. Receipts of Cumberland from New York, Boston, and Baltimore, 15,475 tons.

TO BE CONTINUED.

THE ENGINEERING AND MINING JOURNAL.

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ROSSITER W. RAYMOND, Ph. D., RICHARD P. ROTHWELL, C. E., M. E., } Editors.

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Meeting of the Institute of Mining Engineers.

THOUGH the official announcement of the time and place for the next meeting of the Institute has not been made, yet we feel authorized in saying it will probably be held at New Haven, Conn., on Tuesday, the 23rd of February.

We trust a large number of our members will be able to attend, and that they will contribute of their experience papers such as have already secured for the Institute a front rank among the Technical Societies not of this country only, but of the world.

New Method of Gas Analysis.

THE distinguished chemist, Professor HENRY WURTZ, publishes in the *Gaslight Journal*, of which he is the able editor, a very interesting description of his new method of gas analysis. The subject is one of great importance. We regret our space does not allow us to reproduce the article entire ; we give, however, the following extract, which will show the outline of the operation :

The methods I now put forth are founded on the general principle of submitting a slow current of the gas to be investigated to the action of a series of agents, so selected and combined as to absorb and separate, in succession, each by itself, the different proximate constituents of a gaseous mixture, converting each into a solid or a liquid form, which can be weighed on a balance. About 1840, European chemists were using successfully methods of this class. One method, which arose at that time, out of their experiments in this direction, was that still in use in "Organic Analysis," for separating in distinct and weighable forms water and carbonic acid. Strangely, however, the capabilities of these methods seem to have been looked upon as very narrow and special, and they have passed almost out of view. At the present day it is probable that a majority of chemists would not have anticipated, in advance, much satisfactory success in the application of these modes of procedure to such complex mixtures as crude coal-gas, or a furnace gas. My experience has, nevertheless, tended to an opposite conclusion, and I believe that I discern in this direction the only practicable road to complete success in the proximate analysis of heterogeneous gases.

[In this memoir, I will here say, I must confine myself mainly to illuminating gases. The handling by these methods of furnace products will furnish subjects for future communications.]

In a crude coal gas, as drawn from the hydraulic main, over the retort-benches, the following main constituents may be enumerated, which it is highly important that a gas-chemist should be competent to separate and determine with precision :

1. Tar, suspended in the form of spray.
2. Water, in similar mechanical admixture.
3. Water, as vapor, dissolved in the gas.
4. Naphthaline (condensable).
5. Other condensable hydrocarbons.
6. Smoke and soot (with dust).
7. Ammonia.
8. Carbonic Acid.
9. Sulphuretted Hydrogen.
10. Carbonic Oxide.
11. Oxygen, that is, Intermixed Air.

Of these eleven proximate constituents, I have so far succeeded in separating, with very satisfactory sharpness, Nos. 1, 2, 3, 6, 7, 8, 9 and 11 ; eight in all, besides some approximation to No. 4, the naphthaline in excess. No. 10 the carbonic exide, is still a subject of experiment.

My success, so far, is to be attributed mainly to the gradual attainment, by tentative experiment, of the following devices and manipulations.

First—Arresting suspended matter by means of empty dry flasks and straining through cotton previously *dessicated.*

Absorbing, next, the ammonia, by means of reagents which act on no other ingredient.

Next, drying the gas with CaCl, which, NH^3 being absent, may now be done.

Next, taking up the sulphuretted hydrogen by a normal metallic salt, so selected or so managed as to give up no water or acid vapor to the desicated gas.

Next, using sodic hydrate to absorb the CO^2.

Next, alkalized pyrogallol or other suitable agent, to absorb oxygen arranged so as to lose no water.

In the case of illuminating gases—with some few others—the final (rough) measurement of the gas is then made at an observed temperature by a gas-meter; if with a dry meter, directly ; if with a wet meter, after saturation with moisture at the temperature of melting ice.

In the latter case, of a wet meter, the amount of final moisture in the gas is determined by a reiterated desiccation with CaCl.

The whole process is finally completed, and the separations rendered as sharp as may be, by a process of distillation, either at the ordinary or higher temperature in a current of the same gas analyzed, that has been previously subjected to the same or similar treatment, and thus freed from all the ingredients to be separated from each other.

After final weighings, the *correct* initial volume of the gaseous mixture is calculated by certain formulæ derived from the crude meter-indications and the final weighings.

The Use of Soft Steel in Construction*

THE softest kinds of steel have long attracted the attention of builders ; as long ago as 1867 there was seen, at the Paris Exhibition, a bridge built entirely of soft steel plates and angles, while England had, at that time, built numerous boilers and ships' hulls of this new metal. Unfortunately, the steel, as soft as it was then made, showed many apparently inexplicable defects in actual use. Finished plates broke under the slightest strain, and sometimes even without apparent cause. Plates shaped, drilled and ready for use, after a few hours would be found broken; others broke in riveting. The explanations offered for these curious phenomena were not satisfactory. Both producers and consumers made investigations, and to-day the quesion of the use of steel in constructions is considered as fully answered in France. The works of Terre Noire first, and afterwards those of the Creusot, produced a steel of remarkable softness ; the first of these works used the Bessemer and Martin processes, the second the Siemens-Martin process ; and they made products of the same quality, which gave equal satisfaction.

[Efforts have been made to ascertain the cause of the great difference in quality between the soft steel made by these works and that made by other European or American works. (Mr. BARBA, in his interesting practical work, has confined himself altogether to the use of the product, and gives no information on the metallurgical question.) The remarkable softness of the products made first by the Terre Noire, and afterwards by the Creusot works, is owing to the use of ferro-manganese containing 50 per cent. and over of metallic manganese. The operation is as follows : In the Bessemer process the blowing is continued some twenty seconds longer than for common steel, and about 2 per cent. of ferro-manganese, heated to a cherry red heat, is then thrown into the converter. The same proportion of ferro manganese is added in the Martin process, at the moment when a degree of softness is attained that will allow a test piece to be bent double when cold.]

In 1873, at the ports of Lorient and Brest, three large men-of-war were upon the stocks to be constructed according to the plans of Mr. DE BUSSY, Engineer of the Navy. Steel was to enter in their construction as the most important item. The frame, the inner skin, the bulkheads, the bridges, all, in fact, except the outer sides, were to be made with this metal. The remarkable qualities of the material furnished by the works of Terre Noire and the Creusot permitted the successful completion of these ships.

The advantages of the use of steel in ship building are much more striking than in land structures. A considerable reduction in the weight of the hull allows a proportional increase in the weight of the armament, of the armor plates, of the machinery and of the carrying capacity.

The work, of which we give only a brief review, is a history of the efforts made by the French navy to solve that important question. We will note particularly the practical conclusions.

The author commences with a statement of his views on the constitution of steel ; we will not follow him in this where all hypotheses are admissible provided they are in accordance with, and explain, facts. What has impressed us more is the importance he attaches to the annealing of every piece of steel which

* Treatise on the use of steel in construction, with the method for working plates and bars of cast steel, by J. BARBA, Marine Engineer. Paris—BAUDRY. 1 volume, with 80 illustrations in the text.

nas undergone a certain mechanical work, such as the chipping, punching, hammering, drawing, upsetting, or any local working, while hot. This method cannot be too highly recommended, for it has the effect of restoring entirely to the metal the elasticity it had lost. The annealing must be made at the temperature of a cherry red heat, so as not to change the interior structure of the metal.

The steel delivered to the ports of Lorient and Brest had a minimum tensile strength of 45 kilogrammes per square millimetre, 64,000 lb. per square inch, and reached the limits of elasticity only under a weight exceeding 29 kilogrammes per millimetre, 41,251 lb. per square inch.

If we admit that iron plates attain this limit of elasticity under a load of 16.5 k., 17,776 pounds per square inch, and this in most cases is rather exaggerated, then construction in iron plate may be replaced by one in steel plate, ⅔ of the same thickness or weight, or in the proportion 22 iron to 16.5 steel.

The experiments made at the ports to test the qualities of the plates made at the Terre Noire and the Creusot were first on their tensil strength.

Without describing the machinery used for this purpose, it suffices to say that it was a scale whose beam stands horizontal by the means of a screw, and the elongations were marked on a dial by a needle whose motion was connected with that of the test piece.

The pieces had a uniform section with a length of more than 20 centimetres; the distance pointed which was used to mark the elongation was exactly 20 centimetres in length.

We give herewith the results of several tension tests made at the ports as well as at the works.

	At the Ports.		At the Works.		At the Ports.	At the Works.
	kil. per sq. mm	lb. per sq. in.	kil. per sq. mm	lb. per sq. in.	Elongation. per cent.	Elongation. per cent.
Plates.....	47.2	67,131	47.5	67,557	22.0	23 2
Double T's....	51.7	73,528	52.6	74.808	19.5	21.1
Angles.....	45.7	64,997	48 0	68,268	21.7	24.5

The difference in the machines used at the ports and at the works may explain the slight discrepancies in the above figures.

The navy required for the plates and angles 45 kgs. and 20 per cent., and only 45 kgs. and 18 per cent. for the Double T's, in which the rolling might have produced a little brittleness and a diminished elasticity.

A few experiments were made with tempered bars, annealed and unannealed. It was noticed that the tempered metal lost an important part of its elasticity, while annealing, on the contrary, restored to it all its former qualities.

To test the softness of the metal, strips cut from plates or shaped bars were bent. This operation was performed with the hammer striking only upon the ends of the strips and never upon the joint where the bending took place. A double bending cold was thus obtained of which the flattening was more or less complete according to the degree of softness of the metal.

Punching, Drilling, Chipping, Hammering of Plates and Angles.—The first question studied at Lorient was on the deterioration of the soft metal during the several different workings to which angles and plates might be subjected when cold.

It was found in plates of from 7 to 12 millimetres in thickness:

1st. That the effects of punching and shearing are essentially local and do not extend to a distance of more than 1 millimetre on the edges of the place sheared or punched.

2nd. That neither cracks nor flaw exist in the part altered.

3rd. That tempering destroys the effects of shearing and punching in bringing the metal to the condition in which it would have been if planing or drilling machines had been used.

4th. That annealing, either alone or after tempering, destroys, as does also tempering alone, the alterations due to the shears and and the punch.

The author shows also that drilling does not, in any way, change the quality of the metal, and he concludes that to obtain from steel plates and double T's their full value, they should not be worked with shears or punches except when they can be subsequently annealed, thereby restoring the structure altered by these tools. *Therefore plates should be planed if they be straight, and turned if curved.* It is the same for the extremities of angles. Holes should be drilled, or punched and enlarged with the drill. In order to render punching less injurious, it would be better to use a die of a diameter larger than the punch.

Under ordinary conditions, punching with enlarging by drilling is more economical than drilling alone, and gives very good results. Cold hammering is bad, and injures the metal considerably. All these defects disappear by a subsequent annealing, which cannot be too highly recommended.

Special Working of Plates. Truing up should not be done by hammering, except when the metal is to be subsequently annealed. It should be done in the planing machine or by the hydraulic press, with a uniform pressure extending over a considerable area. The plates should be shaped hot, and the heating carefully effected, where the deformations are local and great. The hydraulic press or steam hammer with stamps can be used with advantage, avoiding as far as possible local heating, which destroys the homogeneity and elasticity of the metal.

The indispensable condition of success, in cases of complicated shapes, is a certain number of annealings; one, at least, is required for one plain deformation, and in most cases it can be so arranged that this one annealing will recover the injury made by cold and hot working. The gas furnace is to be preferred, both for heating and annealing.

Special Working of Angles.—Mr. BARBA endeavored, as far as possible, to work angles cold, that is, the opening or closing of the angle, and the shaping. Hot working, as it is now done at Lorient, is to be preferred. The angles are heated in the gas furnace, and shaped upon shaping plates; they are bent and squared with tongs and levers. The form is traced on the shaping plates with pins more or less inclined to form the square knees. A strip of plate resting on the pins prevents their indentation on the flanges, and gives exactly the outline of the vertical flange, while the other rests on the shaping plates.

With one or two heats the required form is obtained, the shaped angle is afterwards annealed, and then laid on the shaping plate to cool. A cherry-red heat does not change the form of the angle piece, provided care is taken to have it supported at a sufficient number of points. The slight irregularities which may happen are afterwards corrected with the hand press.

In making shoulder pieces and elbows in acute, right or obtuse angles, the work has to be done hot. Welding angle pieces being always a delicate operation when made in cast metal, however soft that may be, a small piece of a wrought iron square perfectly welded to the steel is inserted and greatly facilitates the work.

It must not be supposed from this that the metal made at Terre Noire and the Creusot does not weld on large surfaces; bars having stood 43 kilogrammes and 25 per cent. elongation, gave after welding a tensile strain of 60 kilogrammes and 10 per cent of elongation. Welding, therefore, causes a certain alteration in the metal.

Special Working of Double T's.—The double T rails made with the metal of Terre Noire, and furnished by M. M. MARREL, had to be submitted to more or less shaping (squaring) of the flanges with the web, finally some had to be split in two at the ends, to curve the branches to a radius of 1 m. 50.

After having tried cold working with annealing afterwards, it has been decided to adopt hot working except for curves of large radius. The curving is done as in the case of angles, on a shaping plate.

Rivetting Steel Plates and Section Irons.—To rivet steel plates, the rivets must be thicker or more numerous than for iron plates of the same thickness.

The use of steel rivets has not yet come into practice. It is more advisable to use iron rivets corresponding to a thickness of iron plates one-third greater than the steel.

The most convenient form of rivet is that with conical head, but a still more advantageous rivet is made with a conical and flat head. If, from any cause, the head is broken the plate does not get loose but is kept firm by the cone shape of the rivet. A sufficient enlargement of the hole can be obtained by punching on a die of a diameter a few millimetres larger than the diameter of the punch. For steel plates it is better to bore out the holes with a drill to the desired conical shape.

Such is a summary of the practical rules given by Mr. BARBA for the use of steel in construction.

The author, in conclusion, expresses his belief that this metal, from its valuable properties, is destined to play an important part in construction in the future.

NEW PUBLICATIONS.

Grundriss der Metallhüttenkunde, von BRUNO KERL, Professor. Leipzig, 1873.

Under the pressure of other engagements we have postponed for some months the pleasant duty of noticing Professor KERL's new volume, which appeared in May, we believe, of last year, and which we received early in the Autumn. It was our desire to wait for an opportunity of giving to this work a careful examination which its value and importance, no less than the distinguished position of its author, demanded at our hands.

Professor KERL's activity, for more than twenty-five years, as an instructor, first at the Mining School of Clausthal, and subsequently at the Academy in Berlin, and his labors as editor of the *Berg-und Hüttenmännische Zeitung*, and as author of the magnificent handbook of metallurgy in four volumes, which has so long been a standard authority in the art, guarantee, in advance, the scientific and literary completeness of any publication to which he sets his name. The volume before us is the second of a series, which are to be independent of each other, and yet to constitute, taken together, what he too modestly calls an outline of metallurgy. The first volume, which appeared some time ago, treated of the general elements of the science; the present work comprises the special metallurgy of lead, copper, silver, gold, platinum, quicksilver, zinc, cadmium, tin, arsenic, antimony, bismuth, and nickel; iron and steel remain to be treated separately. This *Outline* is not intended to supersede a previous handbook of the same author. Its plan is primarily that of a guide to the teacher and the student. But it is executed with such admirable system, clearness and fullness, and (contrary to the usual character of text-books for instruction), it is so completely abreast of the latest standpoint of progress in practice, that no working metallurgist can afford to be without it. An examination of its contents shows it to be far in advance of any other elaborate treatise on this subject, and to contain much important material which can only be found, otherwise, in scattered publications. We can mention but a few of the features of the work which have seemed to us, as we glanced over its pages, to give it special value and some degree of novelty.

Under the head of copper, the moist extraction, which in recent time has necessarily acquired so great a prominence, is treated with special fullness; and in the section devoted to silver, the zinc process inaugurated by PARKES, and the processes of amalgamation and humid extraction receive more attention than is given to them in any former manual with which we are acquainted. We notice,

also, under the head of nickel a description of the treatment of nickel matte and speisse for the manufacture of commercial nickel, constituting the best summary of the different processes which has yet appeared. The discussion of the metallurgy of zinc is also very complete.

The divisions of this book which treat of the processes of gold extraction, and, indeed, of all the processes both of gold and silver metallurgy which are peculiarly American, are the least satisfactory. It is easy to see that Professor KERL has not enjoyed the opportunity of personal observation and criticism which even a brief journey in this country would have afforded him, and that, being thrown back upon the literature of the subject, he has received with too much respect the sanguine statements of inventors and speculators concerning special apparatus.

It is principally the practice of such people in the United States to publish full and glowing accounts of their methods and apparatus before working results have been obtained. Sometimes this course is wise, in view of the circumstance that it would not be possible to speak favorably of their devices after a practical test; but the result of their literary activity is a mass of nearly worthless publications, which never have led to trustworthy or valuable facts in practice, and which scarcely deserve to be mentioned in a text-book of metallurgical science. It is quite natural for an author residing abroad to suppose that all the inventions so glowingly described have been at least put into actual operation, and are entitled to honorable mention. But it is unfortunate that Professor KERL, in his readiness to recognize novelties, particularly when they are brought forward in America, where genius, unaffected by the rules of conventionality and the dogmas of experience, is so apt to "revolutionize" ancient arts, should enumerate indiscriminately so many "inventions" in metallurgy, which have only existed long enough to achieve ignominious failure. Others, again, which are not in themselves absurd, are mentioned in such a way as to leave the erroneous impression that they have been actually employed in practice, whereas they have been merely suggested or subjected to abortive experiments.

Thus, from the pages of the book before us, it might be inferred, that the furnaces of STETEFELDT, GERSTENHOEFER, and WHELPLEY and STORER, and the cylinders of BRÜCKNER, have been successfully employed in roasting gold ores for amalgamation. It is quite possible that some of these furnaces, properly handled, would accomplish that result; but all experiments hitherto have been limited, incomplete, and, we think, unsatisfactory. RIVOT'S method of roasting pyrites with steam was tried half-a-dozen years ago in California, with unmistakable failure as a result; yet it is quoted here without unfavorable comment. KEITH'S process, which had its brief day in Colorado, is likewise dead beyond resurrection; yet we find no obituary of it here. The apparatus for amalgamation, almost universally employed, is but vaguely described, without illustrations, while a rattle-trap called SMITH'S Portable Amalgamator, which we never saw in use, and which is evidently one of those ingenious contrivances that practical millmen would be swift to reject, receives the compliment of a woodcut and a description.

The truth is, that patented inventions, the proprietors of which are seeking for patrons, are more likely to push their way, by means of circulars and illustrated articles, into technical literature, than those practical forms which have grown into use by years of experience, and which nobody is pecuniarily interested in describing and praising. Such works as PHILLIPS'S *Gold and Silver*, BLAKE'S *Mining Machinery*, KING and HAGUE'S volume on Mining Industry, the various works of GUIDO KÜSTEL, the illustrated catalogues of leading manufacturers, and the reports of the United States Commissioner of Mines and Mining, afford the best guides to a knowledge of the actual state of the art in this country. It may be safely said that what inventions and processes are not described in these works cannot have attained extensive use or achieved technical success. The prospectuses of stock companies, the circulars of patentees, and the paragraphs in technical journals, setting forth the claims of inventors, are not authorities which the compiler of a text-book can safely follow. The pages of this journal which Prof. KERL does us the honor to quote frequently, are not an exception to the proposition here laid down. We are justified in laying before our readers as a matter of news and without editorial endorsement, the advantages claimed by the proprietors of new machines, which we should not dream of introducing into a book for permanent use as recognized improvements in metallurgy. But what we criticise in Prof. KERL'S chapter on gold is neither the enumeration of mere schemes proposed, but never executed; nor the mention of plans which have been tried and have failed, it is the indiscriminate grouping of these with the methods approved by long experience, so that the student is unable to distinguish among them. This chapter, so far as it treats of gold amalgamation, must be pronounced unsatisfactory. We have spoken of it all the more frankly because it seems to us to stand in strong contrast with the precision, clearness and judgment which characterize the remainder of the work.

After all, it is not for instruction concerning American processes that the American metallurgist will need this manual. The defect which we have pointed out may annoy the foreign student, but those who are personally acquainted with our processes and machines will not be misled by the book in these matters, simply because in these matters they will not consult it. On the other hand, its admirable survey of the field of metallurgy, its analysis and classification of the innumerable shades and varieties of foreign practice, its recent and trustworthy information concerning the latest improvements in the art, and its abundant references, by means of which the inquirer may pursue each statement to its sources and find the information he seeks in any desired degree of fulness—these qualities distinguish Prof. KERL'S *Outline* above most other books of its class, and render it a great boon to the profession.

F

Coal Mining in South Wales.*

MODE OF WORKING.

FROM the main or water levels leading to the pit bottom, or to slope drifts, or to the surface, as the case may be, headings are driven to the rise and to the deep, the rise headings being generally called cross headings, and from the headings the stall roads are driven. The amount of dip work will depend upon the quantity of water; and the distance between the headings will depend upon the length it is found most prudent to drive the stall roads before cutting them off; this question, as well as the distance between the stall roads, depending chiefly upon the nature of the floor or roof, or both combined, the conditions vary with almost every seam, and with the same seam in different localities.

There are three principal systems of getting the coal, namely:—first, single road stall; second, double road stall; and, third, long wall.

The long wall system was generally substituted, a few years ago, for No. 1 system in working the steam coals of the Rhondda and Aberdare Valleys, and the result has been to increase the produce of large coal, simplify the ventilation, and reduce the labor of the workmen.

SINGLE AND DOUBLE ROAD STALLS.

Single road stalls are generally turned narrow for a short distance off the heading, after which they widen out to their proper width. The width of single and double road stalls will depend principally upon the quantity of rubbish to be stowed away, and the rate at which the seam dips. The size of the pillars between the stalls, and between the stalls and the heading, will depend for the most part upon the nature of the roof and floor. The stall pillars are worked when the stalls have gone their full length, and the heading pillars when there is no longer any use for the headings, and the operation is called "pulling back the stall," or "pulling back the heading," as the case may be.

LONG-WALL.

This system is adopted when the roof is sufficiently strong to remain up, with only the aid of a few props; but more generally when it is sufficiently friable to settle down permanently behind the working face. On account of the friable roofs and the great pressure, it would be almost impracticable to work some of the steam coal seams in the deeper pits otherwise than by long-wall; and so pernicious an effect have stumps or pillars upon the roof, that it has become the general practice to work the whole of the coal away with the exception of the large pillars at the shaft bottom. It is important in this system that the working face should be kept moving on, so as not to give the roof time to break at the face; regard, too, must often be had to the quantity of rubbish available for packing. The ventilation is more simple in this system than in stall and pillar working, and the percentage of large coal is higher. It is the usual custom in South Wales to take the horse and tram to the face of the workings; and when the seam is not thick enough, either the top or the bottom has to be cut in the horse roads to give the necessary height. In some instances, when both top and bottom are very hard, the coal is put along the stall either in small carts or in sledges, and loaded into the trams at short sidings, often called "spout holes," off the headings.

The collier in South Wales has to cut the coal and fill it into the trams; he has to gob the rubbish, make and keep the working place safe and in order; he has to keep his stall road in travelling order, and do all the timbering necessary in his working place.

The mode of hewing the coal depends upon the section of the seam, and in what degree it sticks to the top or bottom. When the seam is in one block, the holing or kirving is done either at the top or at the bottom; and when the seam is divided into different beds, the holing might be done in one of the smooth partings, or in any intervening band of clod that may be suitable for the purpose. When the slips are frequent, and long-wall working adopted, the operation of cutting or securing the coal is a comparatively easy operation.

The bituminous seams are cut "through and through," but in the steam coal seams the large coal only is sent out.

The coal is screened at the surface, over screens with longitudinal bars, on the average 1⅛ inches apart, and 13 feet long by 7 feet wide, angle about 20°. The small out of each tram is weighed, and if it exceeds a given weight, a deduction is made from the hewer. The machine, by means of which the weight of the small coal which passes through the screens is ascertained, was named, many years ago, by the colliers of the district, "Billy Fairplay." The coal after being screened at the colliery, is known as "colliery screened large," but, in many cases, it is again screened at the port of shipment, and is known as single screened at time of shipment, or double screened at time of shipment, as one or both of the two screens in the shipping shoot are open. The proportion of steam coal small left underground is about 15 per cent.; the small taken out by screening at the colliery averages about 14 per cent.; and double screening, at the port of shipment, from 7 to 10 per cent.

Coal cutting by machinery has not been adopted to any material extent in this district, but Firth's and Baird's and other machines are on trial at one or two collieries, and are said to be giving good results. A greater percentage of large coal is undoubtedly obtained by the use of these mechanical cutters.

In portions of a colliery where strong blowers of gas make it dangerous to blast with powder, Chubb's hydraulic hand machine for wedging out the coal has given good results, and a hand machine for kirving has lately been introduced at the Ynyscynon Colliery.

Argillaceous ironstone is worked generally by the long-wall system, but in

* A paper by Mr. T. F. BROWN, read before the North of England Institute of Mining Engineers.

some cases by pillar and stall ; the black band is universally worked by the long-wall system, and the ironstone is carted along the stall roads to the main headings, where it is loaded into the large trams.

VENTILATION.

Gas is seldom to be found in collieries upon seams which crop out to the surface and are worked by levels. The most fiery collieries are those upon the lower or steam coal seams, and, probably, no seam in any coal field gives off more gas than the Aberdare four feet seam, especially in new districts where the gas has not had any previous opportunity of draining off. The whole of these lower seams are very subject to strong blowers, generally in the roof, upon which, of course, they have a very bad effect, independent of the danger involved in the presence of the gas itself. The ventilating power usually adopted is the furnace, but mechanical ventilators are now at work at several of the collieries. The first great stride in the direction of mechanical ventilators was Mr. STRUVE's air pump ; several of these machines have been erected in South Wales, but the Guibal and the Waddle fans have latterly come into more general use.

[The Guibal Fans in use are from 25 to 40 feet diameter, the majority being from 30 to 36 ; the width is about one third the diameter. These 30 feet fans are guaranteed to produce a vacuum of from 2½ to 3 inches of water gauge when making 60 to 65 revolutions per minute, while fans of 36 feet diameter, making 60 revolutions, are guaranteed to produce a water gauge of 3¼ to 3½ inches. The 40 feet fans, 10 and 12 feet wide, running at 72 revolutions, are guaranteed to produce a vacuum equal to 6½ to 6¾ inches water gauge. With 68 revolutions, one of these is actually producing a water gauge of 5 inches and circulating 99,000 cubic ft. of air. These results are so much higher than anything yet attempted in this country, that they have a special interest, not that it is desirable to have a high water gauge, but that it indicates great perfection in the construction of the machine.—Ed. E. and M. J.]

UNDERGROUND HAULAGE.

At most of the important collieries where the lead has become considerable, the underground haulage is done by machinery. In the levels the main and tail-rope system is adopted, worked generally by a pair of horizontal cylinders. On the roads to the deep, the empty trams take the rope after them, the drum riding loose on the shaft, and the engine hauls the full trams up the bank. When the rise headings become cut off by new or upper levels, the most convenient of the old headings are often converted into self-acting inclined planes. Arrangements are frequently effected for hauling along the dip and rise headings by spare ropes in connection with the main and tail ropes of the principal levels. Within the last few years, compressed air has come very much into use as a motive power for underground engines, and though there is a loss of power at the outset in compressing the air, this objection is more than counterbalanced by the extreme facility with which the power may be applied, and that, too, under such variable circumstances. Examples of successful applications of compressed air for hauling purposes may be observed at several of the Powell's Duffryn Company's collieries. Steel ropes are found in the long run to be the most economical. Electric signals are often used on the main engine roads. The trams are brought from the face of the work to the different stations by horses driven by men called hauliers. The main engine roads are laid with comparatively heavy double-headed rails chaired to the sleepers ; but on the horse roads a lighter and flat-bottomed rail is used, fastened to the sleepers by nails. In working bituminous seams where the small coal is brought out, closed sheet iron or wooden trams are used ; but when the small made in cutting the coal is gobbed, and the large coal only sent out, trams made of flat bar iron, with spaces between the bars, are used. The trams vary in capacity. In some of the bituminous collieries a tram carrying as much as 30 cwt. of coal is used. The question of large trams, as compared with the smaller tubs used in other districts, has been very fully discussed from time to time. Small tubs are used at some of the collieries, but the Welsh people, as a rule, are more in favor of the large tram. There is no doubt that certain seams can be worked more economically with small tubs, whilst the particular conditions of other seams would suggest the adoption of the large tram. In working the best steam coals, where a cubical fracture does not prevail, and when it is important to procure the coal as large as possible, a tram of large capacity becomes a commercial necessity. The tram in pretty general use at the largest steam coal collieries is made of flat bar iron, with spaces between the bars ; the tare is from 7 to 8 cwt., but the weight is often reduced by using steel instead of iron in their construction. The load of coal is from 18 to 20 cwt. At some of the best collieries, where the roads are kept in first-rate order, trams with fixed wheels are used.

The following are the particulars of the underground haulage arrangement at the New Tredegar Colliery :—Air-compressing engines at the surface. A pair of steam and air-compressing cylinders, 21 in. diameter and 5 ft. stroke ; speed, 35 revolutions per minute ; pressure of air, 22 lb., supplying the following engines underground :—

Two single engines,	12 in.	cylinder and	12 in. stroke.
One single do.	14 in.	do. and	18 in. do.
Two pairs of engines,	14 in.	do. and	18 in. do.

but as the underground engines are not all working regularly at the same time, the average speed of the air-compressing engines is 25 revolutions per minute, and average pressure of air 35 lb. per square inch.

COAL TRADE REVIEW.

Import Duty on Coal.

Anthracite free. *Bituminous*, per ton of 28 bushels, 80 lb. to the bushel, 75c., gold.

All *slack*, or *culm*, such as will pass through a half-inch screen, per ton of 28 bushels, 80 lb. per bushel, 40c., gold.

Not otherwise provided for, per ton, 40c. gold.

This is the only report published that gives full and accurate returns of the production of our Anthracite mines.

NEW YORK, Jan. 29, 1875.

The Production of Anthracite Coal for the week ending Jan. 23, 1875, was as follows :

Tons of 2240 lb.	WEEK. Tons.	YEAR* Tons.
Wyoming Region.		
Delaware and Hudson Canal Co	48,495	137,170
Delaware, Lackawanna and Western R.R	38,483	118,285
Pennsylvania Coal Co	20,068	74,735
Lehigh Valley R.R.	18,863	61,090
Pennsylvania and New York R.R	....	....
Central Railroad of New Jersey	1,621	6,471
Pennsylvania Canal	....	....
Lackawanna & Bloomsburg	6,683	22,131
Sold at the mines by L. & W. C. Co.	....	....
	134,813	419,882
Lehigh Region.		
Lehigh Valley R.R	3,549	66,449
Central Railroad of New Jersey	....	....
Danville, Hazleton & W. B.R.R.	401	778
	3,950	67,227
Schuylkill Region.		
Philadelphia and Reading R.R	10,935	36,954
Shamokin and Lykens Valley	1,741	13,285
	12,676	50,239
Sullivan Region.		
Sullivan and Erie R.R	207	755
Total of all the regions	151,646	538,103

* Year beginning Jan. 1.

The following table does not give the entire production of our bituminous mines, but it is by far the fullest report published.

The Production of Bituminous Coal for the week ending Jan. 23, was as follows :

TONS of 2000 lb., except where otherwise designated.

	Week. Tons.	Year. Tons.
Cumberland Region, Md.		
Tons of 2240 lb.	17,130	59,349
Barclay Region, Pa.		
Barclay R.R. tons of 2240 lb.	5,569	19,160
Broad Top Region, Pa.		
Huntingdon & Broad Top R.R.	2,849	8,730
Clearfield, Region, Pa		
Snow Shoe	1,367	3,790
Tyrone and Clearfield	11,096	28,620
Allegheny Region, Pa.		
Pennsylvania R.R.	3,659	9,861
Pittsburgh Region, Pa.		
West Penn. R.R.	3,893	11,447
Southwest Penn. R.R.	88	210
Penn. and Westmoreland gas coal, Pa. RR.	14,598	41,729
Pennsylvania R.R.	5,602	15,442
Kanawha Region, W. Va. to Dec. 12.		
Chesapeake and Ohio R.R.	2,215	6,327

The Production of Coke for the week ending Jan. 21

Tons of 2000 lb.

	Week. Tons.	Year. Tons.
Tyrone and Clearfield	37	65
Alleghany Region	....	....
West Penn. R.R.	991	3,647
Southwest Penn. R.R.	7,926	24,780
Gas Coal, Penn. R.R.	840	2,110
Pittsburgh Coal, Penn. R.R.	1,356	4,572

Receipts at Port Richmond, none ; shipments, 25,000 tons ; and balance on hand 126,500 tons.

Returns from Greenwich, Philadelphia.

	Bituminous	Gas Coals.
Receipts	1,612	....
Shipments	314	....
On hand	2,409	....

The receipts of coal by the L. S. & M. S. RR. at Buffalo for the week were 5,137 tons.

The exports of coal from Baltimore this year amount to 4,267 tons, as compared with 7,654 tons in 1874. The exports for the week amounted to 2,825 tons.

	week.	year 1874.	year 1873.
The receipts of coal at Coal Port (Trenton)	..	..	..
" " " " South Amboy	2,984	10,634	43,808
Shipments at Coal Port (Trenton)	..	..	..
" South Amboy	4,136	16,669	27,854

The Anthracite Coal Trade has certainly improved, owing mostly to the continuous cold weather, but very materially assisted by the miners' strike. The stocks of coal in the Eastern markets have been very much reduced, owing to the heavy demand for domestic use, so that now we find some towns actually short of coal, and, owing to the ice in the various rivers and harbors, unable to procure what they want. It is said that the large companies are, as a rule, firm in their circular prices, and that the undercutting, which has existed for some time, with some of the smaller firms, is not so conspicuous. It is safe to say that prices have advanced fully 15c. since the 1st inst.

As was intimated in our last issue, the WARD, TALBOT & OLYPHANT trouble has been adjusted by the Delaware & Hudson Canal Company. It appears strange, but nevertheless is said to be a fact, that the Company made a *bona fide* sale of their yards to the above-mentioned firm, and afterwards compelled them to issue a circular, which they did on the 25th inst., saying that their prices were advanced as follows : Stove $7 85 ; Egg $7 60 ; Grate $7 60 ; Chestnut $7 10, all delivered. There was a very strong ill feeling shown by the various members of the Combination on account of the action of the Delaware & Hudson Canal Company in this matter, and it is said that if it had not been promptly settled the Combination would surely have been broken. This resulted in an examination of the general working of the Combination, and the matter of a contract to carry coal over the Delaware, Lackawanna & Western Railroad for Messrs. MEEKER & DEAN, or the collieries at Kingston, which they represent, was looked into. It is said that this firm had a contract with the railroad company to carry a certain quantity of coal to Hoboken at a special low rate. For some time past these dealers have been greatly underselling the market, thereby completely unsettling it. It is said that at the above-mentioned meeting of the members of the Combination, the Delaware, Lackawanna & Western Railroad Company agreed to cancel this contract. If this be the case, the Combination is upon a firmer basis than it has been for months. With the ability to bring to terms so promptly two such strong companies as the Delaware and Hudson Canal Company, and the Delaware, Lackawanna & Western Railroad Company, there is nothing now to indicate that the Combination will not maintain itself through the coming season.

The labor question is without any great change ; the miners appear firm, and some of the companies think they may stand out two months more. The mining companies have concluded that wages must be reduced, and there is no doubt that some of them will hold out until the first of July if necessary. Although in the Hazleton and Schuylkill regions the miners are mostly upon strike, yet we note shipments from those regions, last week, of about 20,000 tons.

The Wyoming Region has turned out more coal since January 1st than it did during the corresponding time of last year.

On the 27th inst., the Delaware, Lackawanna & Western Railroad Company, sold at auction 25,000 tons of coal. With the exception of stove coal, which realized $6 05, as compared with $6 03 last month, the prices obtained were under those of December, and the average $5 45 per ton, as compared with $5 43 last month. The following were the prices obtained as compared with the programme prices :

	Tons.	Average Price.	Programme Price.
Broken	5,000	$5 14	$5 75
Egg	5,000	5 25	5 90
Stove	10,000	6 05	6 40
Chestnut	5,000	4 76	5 35
	25,000		

The demand for both Foreign and Domestic Bituminous coals is very slack, and the business doing is not worthy of note.

From the Cumberland *Daily News* we learn that the leaders in the boatmen's strike on the Chesapeake and Ohio Canal, which took place last summer, have been convicted of conspiring to disturb the regular traffic of said canal, and to intimidate others, not members of the boatmen's union, from accepting a lower rate of freight than $1.35, or the rate adopted by the union. At the date of the report we have before us, the sentence of the court had not been rendered. Although the boatmen were ill-advised, it is necessary that an example should be made in this case, that there may not be a similar occurrence. How must poor MCCARDELL of the *Times* feel ? First he published a report of a meeting which he addressed, and at which certain resolutions were passed ; afterwards he pronounced them a "*glaring falsehood*," saying "the boatmen have passed no such resolutions," and now we learn he was compelled, under oath, to say that he identified the resolutions published in the *Times* of August 27, 1874, as the ones passed at the meeting which he addressed. They are, word for word, as published in the ENGINEERING AND MINING JOURNAL of October 30, 1874. He took a great interest in the boatmen, but looking at the ending of this matter, it is doubtful if his eloquence will again prevail with them to act in a similar manner.

The following are extracts from our latest mails :

"BUENOS AYRES, Dec. 14, 1874.

"Coal heavy—importation from Cardiff : 25,000 tons left in

September; 21,000 tons in October, and 35 vessels loading in November. Prices have declined to $12, and no prospect of improvement. House coal also abundant; price $11@$12."

"BAHIA, BRAZIL, Dec. 29, 1874.

"Cargo of Newcastle sold at 18 Milreis (say $10); market well supplied."

"PERNAMBUCO, BRAZIL, Dec. 30, 1874.

"Market extremely dull—no enquiry whatever. Receipts work off slowly—nominal quotations, 19 Milreis (say $10.55)."

"RIO DE JANEIRO, Dec. 25, 1874.

"Twenty-two cargoes have arrived in this month. Present supplies exceed 35,000 tons, principally Cardiff and Newcastle. Nominal quotations.

Newcastle	20	Milreis,	$11 00
Cardiff	23	"	12 50
Scotch	18	"	10 00
Cumberland	22	"	12 00"

"ST. THOMAS, W. I., January 11, 1875.

"The arrivals of ten vessels with 5,383 tons of coal, have completely filled the market—many of these vessels have left, seeking market in Cuba and adjoining ports. One cargo sold here @ $5 00; and one at $4 00; another, 620 tons, at Porto Cabello, at $6 00; one, 500 tons, at Mayagues, at $5 00. Some recent arrivals of Cumberland sold at $7 50, but that price is not now obtainable."

"BARBADOS, January 9, 1875.

"Cargo Pictou, 440 tons, at this port, sold for Demerara at $8, less 5 per cent.; cargo of Cape Breton coal sold at $7 for Guadaloupe; one cargo left on the market unsold."

Freights continue quite nominal, and, greatly owing to the ice in the various harbors, are high, the rates from Elizabethport being about $1.50 to Providence, and to Boston about $1.75. Rates from Baltimore to Boston and Sound Ports about $2, all around.

Wholesale Prices of Anthracite Coal for Jan f.o.b. at the Tide Water Shipping Ports per ton of 2240 lb.

	Lump.	Steamer.	Grate.	Egg.	Stove.	Chestnut.
Wyoming Coals.						
†Lackawanna and Scranton at						
Elizabethport & Hoboken	5 55	5 65	5 75	5 90	6 40	5 35
*Pittston at Weehawken	4 75	4 75	4 85	4 95	5 35	4 50
*Wilkesbarre at Port Johnston	5 55	5 65	5 75	5 90	6 40	5 35
Plymouth, R. A	....	....	5 75	5 90	6 50	5 35
Susque. Coal Co. at Amboy W.A.	5 55	5 65	5 75	5 90	6 50	5 35
Kingston at Hoboken	5 55	5 65	5 75	5 90	6 40	5 35
***Lehigh Coals.**						
Old Company at Port Johnston	6 50	....	6 45	6 45	6 60	5 65
Old Company's Room Run "	6 00	....	6 00	6 00	6 35	5 35
Sugar Loaf at "	6 00	....	6 45	6 45	6 60	5 65
Lehigh Coal Exchange "	6 35	....	6 30	6 30	6 45	5 50
Honey Brook at Elizabethport	6 35	....	6 30	6 30	6 45	5 50
Spring Mt. C. Co. at Hoboken	6 35	....	6 30	6 30	6 45	5 50
Beaver Meadow at South Amboy	6 35	....	6 30	6 30	6 45	5 50
Schuylkill Coals.*						
Schuylkill white ash	5 55	5 65	5 75	5 90	6 40	5 35
Schuylkill red ash	....	....	5 75	5 90	6 50	5 35
Shamokin white and red ash	....	....	....	5 90	6 40	5 35
N. Franklin	....	....	....	....	....	....
Lorberry	....	....	....	....	....	....
Lykens Valley	....	....	....	....	....	....

* Small or Pea coal is quoted by these Companies at $1 35 per ton less than Chestnut.

† f.o. b. in New York Harbor.

* This is the rate for Schuylkill coal deliverable on board vessels at North 9th street, Williamsburgh.

	Per ton.
Freight from Hoboken and Weehawken to New York	40c.
" " Elizabethport & Port Johnston to New York	40c.
" " South Amboy to New York	45c.
" " Rondout to New York by boat or barges of the D. & H. Canal Co. "delivered"	50 c.

Wholesale Prices of Bituminous Coal.

Domestic Gas Coals.

Per ton of 2240 lb.	At the Shipping Ports.	Alongside in New York.
Westmoreland and Penn, at Greenwich, Philadelphia	$6 25	$7 65
" " at S. Amboy	7 00	..
Red Bank Cannel Pa., at Phil	8 50	8 50
" " at S. Amboy	8 00	....
" Orrel, "	7 00	7 65
" " at Philadelphia	6 25	....
Youghiogheny, Waverly Co, at Baltimore	6 00	7 65
Despard, West Va., "	5 60	7 40
Murphy Run, W. Va. at Baltimore	5 60	7 40
Fairmount, W. Va "	5 60	7 40
Newburgh Orrel, Md. "	5 50	7 40
Cannelton Cannel, W. Va., at Richmond	11 00	12 50
" Splint, " "	5 25	7 50
Peytona Cannel, " "	....	12 50
Sterling " Ohio	....	12 00
Straitsville, " At Sandusky, O	3 65	11 50

Foreign Gas Coals.

	Sterling.	Am. cur'cy.
Newcastle, at Newcastle-on-Tyne	12/@13/6	7 00@ 8 00
Liverpool House Orrel, at Liverpool	29/	13 00
Ince Hall Cannel "	52/	18 00
" Gas Cannel "	40/	15 00
Scotch Gas Cannel, at Glasgow, nominal	28/	9 50
	Gold.	
Block House, at Cow Bay, N.S	2 25	6 50
Caledonia, at Port Caledonia	1 87½	5 70
Glace Bay, at Glace Bay	2 00	5 50
Lingan, at Lingan Bay	2 25	6 50
Sydney, International and Reserve mines, at Sydney	2 25	5 75
Pictou, Albion and Vale mines, at Pictou	2 50	6 50

Steam and House Coals.

Broad Top, at the mine, $2 25; at Port Richmond, Phil	4 75@5 00	6 00@6 25
Cumberland, at Georgetown and Alexandria, Va	4 30@4 40	5 75@6 00
Cumberland at Baltimore	4 60@4 75	6 25@6 50
Clearfield, " Derby," " Kitanning" and "Sterling," at the mines, $1 25; at Greenwich, Phil	4 75@5 00	5 50
James River, carbonite, at Richmond, Va	6 75	9 00
" bituminous, "	4 00	6 25

Retail Prices in New York.

Anthracite.

Per 2000 lb.	Grate and Egg.	Stove.	Chestnut.
Pittston coal, in yard	$6 00	$6 20	$5 40
Lackawanna Coal, del'd	7 60	7 85	7 10
*Wilkes-Barre, delivered	7 60	7 85	7 10
Lehigh & Locust Mountain, del'd	8 00	8 00	7 50
Schuylkill Red Ash del'd	8 25		

The cost of delivering Pittston coal ranges from 40 cents to $1 per ton, according to distance from the yard.

* Twenty-five cents less than the above rates are charged to manufacturers.

Bituminous.

Liverpool House Orrel, delivered, per ton of 2000 lb	$23 00
Liverpool House Cannel " " "	25 00
American Cannel " " "	16 00
American Orrel " " "	16 00
Straitsville Cannel " " "	16 00
Carbonite " " "	12 00
Cumberland " " "	9 00

Coal Trade of Philadelphia.

PHILADELPHIA, Jan. 28, 1875.

The ice in the river prevents shipments of coal from the stocks accumulated at Port Richmond, with the exception of a cargo occasionally by one of the steam colliers of the Coal and Iron Company.

The stocks of chestnut and pea coal sizes in the retail yards are fast disappearing, but there is a full stock of the larger sizes on hand. Coal begins to come from several quarters, to fill up the gaps created by the last cold spell. Shamokin coal is coming down the Pennsylvania railroad, and also by the Reading, and some Lump coal from the Wilkesbarre Region begins to find its way to the furnaces still in blast on the Reading railroad and its branches, which are not provided with a fair stock. Apparently there will be no suffering for want of coal, notwithstanding the extent of the strike. Bituminous coal is also used for steam purposes, where anthracite formerly was, and unless the rates for anthracite coal are more in keeping with the condition of business generally than was the case last year, what bituminous coal is now used as a temporary expedient, may become a permanent feature, and one of the many changes now taking place in the coal trade.

Everybody is anxiously waiting for the programme of the companies for the coming season, which it is supposed will be arranged this week.

Bituminous Coal, Wholesale

Penn. and Westmoreland (Gas), f.o.b., Greenwich	6 25
Broad Top, (according to destination) f.o.b., Port Richmond	4 75@5 00
Clearfield f.o.b. at Greenwich, according to destination	4 75@5 00

Bituminous, Retail.

760 in yard, per 2240 lb., cartage added.

Anthracite, Retail.

Egg, per 2240 lb., $6 20; Stove, $6 25; Chestnut, $5 10; delivery costs, 75 cents extra.

Baltimore, Md. Jan. 26, 1875.

Reported by our Special Correspondent.

WHOLESALE PRICES PER 2240 lb.

ANTHRACITE.

	By cargoes.	In cars.
Wilkes-Barre, "Lee," or "Diamond,"		
Lump, steamboat	$5 15	$5 60
Broken	5 50	5 75
Egg	5 87	6 13
Stove	6 07	6 35
Pittston and Plymouth.		
Lump and steamboat	....	5 50
Broken	....	5 70
Egg	....	6 05
Stove	....	6 25
"Boston," freeburning white ash	....	5 50
Egg	5 87	5 70
Stove	6 07	6 05
Shamokin, (red or white ash)	....	6 25
Egg	5 82	6 05
Stove	5 92	6 15
Lykens Valley, red ash, egg and stove	6 02	6 55

From wharf or yard, wholesale, 50@75c. additional.

By retail, all kinds and sizes, per 2,240 lb, $7@8 25.

BITUMINOUS.

George's Creek and Cumberland f. o. b. at Locust Point for cargoes	4 60	4 75
West Va. Gas Coal f. o. b. at Locust Point	5 50	....
Kanawha Cannel, coarse	13 00	....
Tyrone	7 25	....
Ritchie Mineral of West Virginia	1 00	....

Boston. Jan. 26, 1875.

Reported by our special correspondent.

CARGO PRICES TO TRADE.

Lingan coal	$5 75	Westmoreland, and Penn.	7 75
Caledonia	5 00	Waverly Co. Youghiogh'y	7 75
Pictou	6 15	Cannelton Cannel	13 50
Block House	5 60	Cumberland	5 70@ 6 10
Red Bank Cannel	10 00	Anthracite,	6 50@ 7 25
Glace Bay	5 00	" Retail	7 50@ 8 00
Sydney	7 00		

Buffalo, N. Y. Jan. 26, 1875.

Per ton of 2000 lb.

	Slack.	Nut & Slack.	Nut.	Lump
Connelsville coke				6 50
Sterling cannel				6 00
Red Bank				5 75
Youghiogheny coal for gas				5 50
Briar Hill coal		3 25		5 00
Fairmount "		3 25	3 75	4 25
Catfish "		3 25	3 75	4 25
Stoneboro "	2 75		3 75	

Briar Hill coal, and Stirling and Red Bank cannels retail at $7 50; all other coals $1 per ton above wholesale prices.

Anthracite f. o. b. vessel.

Grate	6 70	Stove	7 15
Egg	6 70	Chestnut	6 65

Retail prices delivered and screened, $1 per ton additional

Chicago, Ill. Jan. 25, 1875.

Specially reported by Messrs. RENO & LITTLE, Coal Merchants.

Retail prices per ton of 2000 lb. delivered to buyer.

		BITUMINOUS.	
Lehigh Lump	$10 75	Briar Hill and Erie	7 50@ ....
Lehigh prepared and car load lots	10 25	Walnut Hill (W. Va.)	6 50@ ....
Lackawanna, Wilkes-Barre and Pittston,*		Midway (West Va.)	6 50@ ....
Grate, egg, and chestnut	9 50	Cannel	8 00@ 9 00
Stove or range	10 00	Blossburg	8 00
		Indiana Block	6 00
		Hocking "Brooks"	6 00
		Wilmington and Illinois	5 00

*75 cents off these prices for car load lots to country dealers and manufacturers.

Cleveland, O. Jan. 26, 1875.

Reported by our Special Correspondent.

Per ton of 2000 lb. on cars.

Youghiogheny, l'p	$4 40	Columbiana	$3 00
Youghiogheny, nut	3 40	Strip Vein	3 20
Briar Hill, according to quality	$3 85 to 4 00	Mountain Blossburg (blacksmith)	5 50
Massillon	3 65	American Cannel Coal Co.s	
Hocking Valley	3 25	Cannel	4 50
Straitsville	3 25		
Anthracite, Lackawanna on cars, Egg			$6 85
" " " "		Stove	7 50
" " " "		Chestnut	7 00
Youghiogheny Coke, " "		here	5 25
Connellsville " " "		"	5 50

50 to 75 cents per ton additional for delivery at retail.

Cincinnati, O. Jan. 26, 1875.

Please quote prices same as last report; business exceedingly dull for this time of year.

Per ton of 2000 lb.

	Bush.	Ton.
Youghiogheny, or Pittsburgh, afloat	10 c.	—
Pomeroy coal	7@8 c.	—
Cannel coal	18 c.	—
Semi Cannel	11 c.	—
The following are retail prices delivered:		
Youghiogheny	12@14 c.	—
Pomeroy	10 c.	—
Cannel	24 c.	—
Kanawha Semi Cannel	12 c.	—
Anthracite		$9 50
Foundry coke	10 c.	—
Soft coke	8 c.	—

Detroit, Mich. Jan. 26, 1875.

Specially reported by Messrs. ROBINSON & KEYS, dealers in all kinds of coal.

A fair inquiry for stock still prevails, and prices remain firm at last quotations.

Per ton of 2000 lb.

Lehigh Lump, per ton	$10 50	Blossburg	8 50
Lehigh " prep. sizes	10 00	Briar Hill	7 50
Wilkes-Barre, Grate and		Willow Bank	7 00
Egg	9 00	Erie	7 50
Wilkes-Barre, Stove and Nut	9 50	Massillon	7 00

Erie, Pa. Jan. 26, 1875.

Reported by our Special Correspondent.

Wholesale, per ton of 2,000 lb.

Bituminous f.o.b.

Briar Hill lump	$4 00	Beaver lump	$4 00

Indianapolis, Ind. Jan. 25, 1875.

Specially reported by Messrs. H. McCOY & Co.

Per ton of 2000 lb.

BITUMINOUS.

Wholesale on board cars in city.

Block coal	$2 50@$2 75	Indiana cannel	6 75
Best "	2 40@ 2 50	Hocking Valley	4 25
Block Nut, per car	18 00	Youghiogheny	5 00
Highland " "	18 00	Blossburg (smithing)	6 50
Block slack, per car load	....	Piedmont	7 75
Peytona, cannel per ton	8 75	Gas coke, ... per bushel	80

ANTHRACITE (Lackawanna).

Grate	$8 70	Chestnut	8 60
Egg	8 70	Stove	8 85

Retail, per bushel of 70 lb.

Block	16c.	Peytona Cannel	32c.
Highland	14	Indiana "	26
Highland Nut, dom. use	9	Youghiogheny	24
Block " "	9	Blossburg	26
Slack, steam, "	8	Piedmont	30
Block & Highl'd Mt. steam—			

ANTHRACITE.

per ton.		per ton.
Grate	$11 00	Stove $11 00
Egg	11 00	Chestnut 11 00

Louisville, Ky. Jan. 26, 1875.

Specially reported by Messrs. BYRNE & SPEED.

Pittsburgh, per load of 1900 lb	$3 50
Pomeroy	....
Buckeye Cannel	5 00
Peytona Cannel	5 75
Nut and Slack	2 50
Kentucky lump, per load	....
" nut, "	....
" Slack "	....
City-made Coke, per bushel	10c
Kentucky on cars at wholesale, per bush.	9c
Anthracite, per ton	$10 to $10 50

Milwaukee, Wis. Jan. 25, 1875.

Specially reported by Messrs. R. P. ELMORE & Co.

The market for coal and prices remain unchanged.

Retail prices per ton of 2000 lb.

Lehigh Lump	$10 00	Briar Hill, select	$8 50
Lehigh Prepared	10 50	Blossburg	8 00
Lackawanna	9 50	Pittsburgh	7 50

New Orleans, La. Jan. 23, 1875.

Pittsburgh coal, retail, per bbl	750
" wholesale	35c.
" to steamboats, per box	60c.
" to manufacturers, per bbl	65c.
" shipments per hhd	$7 00
Anthracite, retail, per ton	$12 50
" wholesale per ton	
Spadra (Arkansas) coal, retail, per bbl	75c.
Mt. Carbon, wholesale, per bbl	45c.
" retail per bbl	65c.
Virginia Cannel, per bbl	90c.
Scotch Cannel, per bbl	1 25

Pittsburgh, Pa. Jan. 26, 1875.

Reported by our Special Correspondent.

Per ton of 2000 lb. and Bushel of 76 lb.

	per ton.		per ton
Youghiogheny coal	$2 00	Pittsburgh retail delivered	
" coke	2 50	per bushel	9c@10c
Connellsville coal	2 10	Anth'cite on cars Lehigh	$7 75
" coke	2 75	" " Wilkes-	
Pittsburgh coal	1 85	Barre	6 75

Twenty-five to fifty cents per ton additional for delivery.

Parke.

St. Louis, Mo. Jan. 25, 1875.

Specially Reported by the COLLINSVILLE COAL AND MINING COMPANY.

ANTHRACITE.

Per ton of 2000 lb.

	City delivery.
Lehigh Lump	$13 50
Lackawanna and Wilkesbarre	12 50
Semi Anthracite	9 50

BITUMINOUS.

Per ton of 2000 lb.

	E. St. Louis.	City delivery
Washington Indiana—smithing	$4 00	$4 87
O'Fallon, Ills	2 00	3 00
Collinsville and Belleville, Ills	1 75	2 75
Indiana Cannel	6 00	7 00
Missouri Cannel		5 00

Retail, 25c. per ton additional.

Toledo, Ohio. Jan. 25. 1875.

Specially reported by Messrs. GOSLINE & BARBOUR.

Per ton of 2000 lb.

	Retail.		Retail.
Wilkes-Barre and Scranton,		BITUMINOUS.	
Large and Small Egg	$8 35	Blossb'g and Cumberl'd	$8 00
Stove	8 50	Massillon Lump	6 00
Chestnut	8 35	Briar Hill	7 00
Lehigh Lump	10 00	Straitsville	3 75
		Hocking Valley	4 00

Soft coal screened retails from $4 00 to $6 00, according to quality.

Halifax, N. S. Jan. 25, 1875

Reported by our Special Correspondent.

Prices per ton of 2240 lb. in gold.

Sydney (old mines)	$4 50	Little Glace Bay	3 50
Gowrie	2 50	Blockhouse	4 00
Victoria	3 50	Albion (at Railroad)	4 25

Montreal. Jan. 20, 1875.

Reported by our Special Correspondent.

Wholesale per ton of 2,240 lb.

Scotch Steam	$6 00	Cape Breton Steam	$5 50
Picton "	5 75	Newcastle Smiths	7 50

Anthracite at retail, 2,000 lb., delivered, less 5 per cent.

Egg	$8 50	Chestnut	9 00
Stove	9 50		

Toronto, Ont. Jan. 25, 1875.

Reported by our Special Correspondent.

ANTHRACITE.

	per ton.		per ton.
Broken	$7 65	Chestnut	$7 65
Egg	7 65	Lehigh	9 00
Stove	8 15		

BITUMINOUS.

Blossburgh	7 50	Screenings	5 00
Briar Hill	7 00	Soft Nut	5 50

Rates of Transportation on Anthracite Coal to Tide Ports.

Lehigh and Wyoming Coals. per ton of 2240 lb.	From Penn Haven.	From Mauch Chunk.	From Hazleton.‡‡	From Upper Lehigh.	From Ashley and Sugar Notch.
To ‡ Newark, N. J. via Central Railroad of New Jersey	2 89	2 73	2 86	3 24	3 45
‡ Mauch Chunk, Pa. via Central Railroad of N. J.	16	..	56	51	72
‡ Phillipsburg, N. J.	1 09	93	1 34	1 44	1 65
‡ Elizabethport, Port Johnston, Hoboken and South Amboy, N. J. shipping and wharfage 35c. add.	2 47	2 31	2 80	2 82	3 03
High Bridge, N. J.	2 40	2 20	2 80	2 79	3 09
Somerville and Baritan, N. J.	2 80	2 60	3 20	3 19	3 49
Elizabeth, Cranford, Westfield and Elizabethport, for consumption.	2 95	2 75	3 35	3 34	3 64
¶ Jersey City, N. J., and New York, via Morris Canal	2 85	2 35	3 17	3 24	3 54
Andover, via Delaware, Lack. and and Western RR	3 30	3 10	3 70	3 69	3 99
§ Trenton, Somerset Junction and Greensburg, via P. RR. Belvidere Division	2 65	2 45	3 05	3 04	3 34
Trenton, for shipment, including shipping and wharfage	2 11	1 95	2 45	2 46	2 76

‡‡ Rates on line coal from Hazleton are 10c. per ton above these figures.

‡ The cost of unloading is to be added to these rates No charge less than 40c. per ton will be made for any distance. Tolls from Mauch Chunk to Phillipsburg for way points will be $1 15 per ton.

§ Twenty cents per ton less when five cars at a time to one party. Provided that where the reduction makes the rate $1 a ton, or less, the rate will be $1.

¶ 20 cents per ton additional for transferring coal from boat to boat, and 30 cents per ton for reshipment of same from wharves.

Schuylkill Coal.

Pine Grove to Port Richmond, Philadelphia via Phila. and R. RR. for shipment 2 12

Tamaqua to Port Richmond, Philadelphia via Phila. and R. RR. for shipment 2 07

Mount Carbon to Port Richmond, Philadelphia via Phila. and R. RR for shipment 1 99

Schuylkill Haven to Port Richmond, Philadelphia via Phila. and R. RR. for shipment 1 92

Chestnut coal, 25 cents per ton higher unless released from loss.

IRON MARKET REVIEW.

New York.

Jan. 29, 1875.

American Pig.—The market is rather quiet again, but prices continue quite firm, with the majority of the best brands practically out of the market. There are, comparatively, no stocks of good Lehigh iron, and with an uncertain supply of coal, owing to the strike of the miners in the Anthracite fields, $27 50@28 are being asked for No. 1 Foundry, and many furnaces are unwilling to contract for iron to be delivered short of April. It is said that the sales of Lehigh iron, so far this year, have been quite large, and such must be the case as the stocks are worked off, and most of the furnaces sold ahead. The present demand, however, appears to be confined to immediate wants, which do not show much increase from what ruled during the whole of last year. Speculators are entirely out of the market, from all we can learn. The coal strike presents no new features, and it is impossible to say when it may terminate. We note sales of about 2500 tons mixed brands at $26@28 for No. 1 Foundry; $25@26 for No. 2 Foundry; and $23 50@25 for Gray Forge, which figures may be given as the present quotations of the market, according to brand.

Scotch Pig.—The demand for this article does not improve. We note sales of about 100 tons of Eglinton, with additional sales of other brands in a small way. Prices in Glasgow have advanced about 2/ during the past week. Eglinton is quoted on the spot at $33@35; Glengarnock, $36@37; Coltness, $37@38. To arrive, lower prices are named, $32 being quoted for Eglinton. Stocks here are light, with but little on the way. The price of Scotch iron must be considerably reduced before much business can be done.

Rails.—We note sales of 6000 tons of steel rails by the Bethlehem Iron Company at $74; 100 tons of English iron rails at a private price, and 600 tons of 16 lb. rails, to be delivered in Cuba, price not given. We were also informed of a sale of 2000 tons of steel rails for Eastern delivery, but were unable to authenticate it. We quote American iron rails at $50 at the mills, and steel at $74.

Old Rails.—Quotations are quite nominal, with nothing doing.

Scrap Iron.—We were informed of some small transactions, but could not learn the particulars. Desirable lots are scarce, and holders are quite firm. We quote for No. 1 wrought, $35.

Boston.

Jan. 23, 1875.

From the *Commercial Bulletin.*

Pig, although quoted higher both in New York and Philadelphia, is here nominally unchanged, that is, to buyers of round lots, though on the five or ten ton orders possibly a 50c. advance has been sustained. The lockout of the anthracite miners, and the blowing out of small blast furnaces may be reasonable causes for an advance of pig iron $2 or $3 a ton, but as yet this market does not feel that influence.

In general terms the foundry men are too short of orders, and find a slight advance in castings so difficult to obtain, that there is nothing behind the advance of pig iron just now known here which will sustain it. The leading mills are now quoting at Hoboken No. 1 $26: No. 2, $24; Gray Forge, $22@$23; but irregular lots still under the bane of the note-shavers' influence, have not rallied, and the close buyers of this market note offers direct at our last quotations.

Bar is regular and slow. The quotations of a leading house of refined at $56, equal to 2¾c., has depressed both buyers and sellers generally, and unsettled the confidence of all in brands and values; 2¾c. is the lowest Cleveland or Pittsburgh quotation direct from the mill, and with a 31c. freight offering it would seem as though 2⅝ was the lowest point lots could be laid down here.

Several of the Western rolling mill men were in New York this week, and reports say, intend visiting this market Monday. If they come seeking orders they will find 2¾c. on the wharf or car here about the extent this market will suggest; in fact 2¾c. at the mill must be the price to suggest any business. Common iron in quantity at 2¾c.@2½c., the few sales making at the inside price generally.

Steel is moving in a small way. The usual carriage trade of this date is not in, while the machine builders are taking up odd lots in a quiet way at current quotations.

Chicago.

Jan. 26, 1875.

Specially reported by Messrs. ROGERS & Co., dealers in Scotch and American pig iron.

Quotations are as follows:

No. 1 Coltness	$46 00@ ....
No 1 Gartsherrie	45 00@ ....
No 1 Summerlee	44 00@ ....
No. 1 Glengarnock	42 00@ ....
No. 1 Eglinton	40 00@ ....
Warner's "American Scotch"	41 00@ ....
Massilon No. 1 Foundry	37 00@ ....
No. 1 Grand Tower Mo. ores (Bituminous)	33 00@ ....
No. 2, " " "	30 00@ ....
No. 1 Mill	28 00@ ....
Union "A" 1 (Anthracite)	32 00@ ....
Union "B" 1 (Anthracite)	30 00@ ....
No. 1 Lake Superior (charcoal)	32 00@ ....
No. 2 Lake Superior "	30 00@ ....
No. 3 Lake Superior "	33 00@ ....
No. 4 Lake Superior "	35 00@ ....
Bessemer Steel Rails	85 00@90 00
New Iron Rails	55 00@ ....
Old Rails	28 00@30 00

Cincinnati.

Jan. 26, 1875.

Specially reported by Messrs. TRABER & AUBERY, commission merchants for the sale of pig iron, blooms, ore, etc.

The improved demand reported in our last still continues. Prices are firm at quotations:

CHARCOAL.

Hanging Rock, No. 1, Foundry	$27 00@28 00	—4 mos
" No. 2, "	25 00@26 00	—4 mos
" Mill	24 00@25 00	—4 mos
Tennesse No 1, Foundry	26 00@27 00	—4 mos
Tennessee. No. 2 "	25 00@26 00	—4 mos
" Mill	24 00@25 00	—4 mos
Missouri, No. 1, Foundry	@	—4 mos

STONE COAL.

Ohio No. 1, Foundry	26 00@27 00	—4 mos
" No. 2, "	25 00@26 00	—4 mos
Ohio Mill	24 00@	—4 mos
Missouri, No. 1, Foundry	28 00@30 00	—4 mos
" No. 2, "	26 00@27 00	—4 mos
" Mill	24 00@25 00	—4 mos

CAR-WHEEL.

Hanging Rock, C. B	45 00@52 00	—4 mos
Tennessee "	40 00@45 00	—4 mos
Missouri "	40 00@45 00	—4 mos
Alabama "	40 00@45 00	—4 mos

BLOOMS.

Charcoal	75 00@ 85 00—cash

SCRAP IRON.

Cast	75@ 90—cash
Wrought	¾ 00@ 1 25—cash

Cleveland.

Jan. 26, 1875.

Specially reported by Messrs. C. E. BINGHAM & Co., dealers in pig iron and iron ore

Our market shows an advance from last quotations. We quote at 3 months.

No. 1, Bituminous	"	29 00@ ....
No. 2,	" "	27 00@....
No. 1.	" Gray Forge	25 00@....
No. 1, Lake Superior Charcoal		33 00@....
No. 2,	" "	31 00@....
No. 3,	" "	33 50@....
No 4,	" "	35 00@....
Nos. 5 and 6	" "	36 00@....
American Scotch, No. 1, Cherry Valley		34 00@....
" " No. 2		31 00@....

Indianapolis, Ind.

Jan. 25, 1875.

Specially reported by NELSON KINGMAN, broker and dealer in pig iron, etc.

Trade very dull at prices named below.

New Rails at mill	$56 00@58 00
Old Rails "	28 00@30 00
Hanging Rock Charcoal Pig No. 1 foundry	28 00@29 00—4 mos
" " " " 2 "	26 00@27 00—4 mos
" " " Mill	25 00@26 00—4 mos
Car Wheel C. B	40 00@48 00—4 mos

STONE COAL.

Indiana No. 1 Foundry pig Red Short	30 00@31 00	—4 mos
" 2 " " "	28 00@30 00	—4 mos
" 1 Forge " "	@	—4 mos
" 2 " " "	@	—4 mos
Ohio No. 1 Foundry pig Cold Short	27 00@28 00	—4 mos
" 2 "	25 00@27 00	—4 mos
" Mill	24 00@26 00	—4 mos
" No. 1 Foundry, Neutral	28 00@29 00	—4 mos
" No. 2 " "	27 00@28 00	—4 mos
Merchant Bar		2½c.—3 mos
1st quality C. H. No. 1 Boiler Plates, per lb		5¾c.—3 mos
1st " Com. Sheet, for No. 24, W. G. "		4½c.—3 mos
1st " Charcoal Sheet " " "		5¾@6 c.—3 mos
Best Bloom Galvanized Sheet, discount 20 per cent		—cash.
2d quality " " " 30 "		—cash.

f. o. b. in Indianapolis.

Louisville.

Jan. 26, 1875.

Specially reported by Messrs. GEORGE H. HULL & Co.

The market is firm but without change in prices. There is considerable inquiry for round lots for future delivery.

The usual time, 4 months, is allowed on the quotations below.

HOT BLAST—CHARCOAL.

No. 1 foundry, from Hanging Rock ores			$26 00@28 00
No. 2	"	"	24 00@25 00
No. 1, forge,	"	"	23 00@24 00
No. 1, foundry,	" Tennessee	"	25 00@26 00
No. 2	"	"	24 00@25 00
No. 1, forge,	"	"	23 00@24 00
No. 1, foundry,	" Alabama	"	25 00@28 00
No. 1	" Iron Mountain	"	28 00@30 00

HOT BLAST—STONECOAL.

No. 1, foundry, from Missouri ores			28 00@30 00
No. 2,	"	"	27 00@28 00
No. 1, forge	"	"	26 00@27 00

COLD BLAST—CHARCOAL.

Wheel from Hanging Rock ores			40 00@50 00
" " Tennessee	"		35 00@38 00
" " Alabama	"		38 00@40 00
" " Georgia	"		38 00@40 00
" " Missouri	"		38 00@40 00
" " Kentucky	"		30 00@40 00

Pittsburgh, Pa.

Jan. 26, 1875.

Specially reported by A. H. CHILDS, Esq., commission merchant for the sale of pig iron, blooms, ore, &c.:

The market is more active, and prices decidedly firmer than

for several weeks past. Good brands of pig iron now command fully one dollar per ton more than at the first of the month.

METALS.

NEW YORK, January 29, 1875.

Gold Coin.—During the week past gold has ranged from 1.12⅝ to $1.11¾, and closed yesterday at $1.12¾.

Bullion.—Fine silver bar is quoted at $1.25⅛@$1.26⅛; gold, per ounce, and fine gold bar at par ($20.67 gold per ounce.) to 1-16 per cent. discount. There has been comparatively nothing doing in bullion since Jan. 1st.

Copper.—There have been sales of about 400,000 lb. since the date of our last review, at about 21¾c. It is said that in all about 300,000 lb. were purchased for export, at the low prices which have prevailed this month. Manufacturers are not buying, and small lots aggregating considerably having been offered, the price has been forced down to the export price or but little above. The stock here is considered light, but with no increase in the demand, the price cannot advance. The London market continues about as it was last week. There is not much copper offering here at prevailing prices, but dealers are meeting the market with their regular customers. 21¾c. is now bid, but 21¾c. is asked.

Messrs. JAMES & SHAKESPEARE, under date of London, January 8, say:

"Bars fell to £82 10/ per ton, cash terms, for good ordinary brands; the sales, however, at this low figure, were confined to a few lots in second hands, holders of which seemed to be alarmed at the continuous heavy advices of charters from Chili, but importers' views are much in advance of this rate. Yesterday the charters for 1st half December were advised as 1500 tons bars, of which 1200 were for England, and 300 for France, the price at Valparaiso on 3d inst. standing in about £86 per ton laid down in Liverpool, usual English conditions; the quantity telegraphed being less than was anticipated, has imparted a firmer tone to the market, and we close at an improvement of about 30/ per ton from the lowest point touched. There is rather more inquiry for Australian for export to the Continent, and judging from the nature of the demand, it would seem that (except in France) the importations of American ingot, which had so interfered with the use of the former description, were now almost worked up."

The imports of copper into England, as per Government returns, estimating the ores to yield 15 per cent., and regulus 50 per cent. of pure copper, were in 1874 54,047 tons, as compared with 52 681 tons in 1873, and 64,615 tons in 1872. The exports in 1874 were 60,947 tons, as compared with 55,149 tons in 1873, and 45,763 tons in 1872.

Lead.—From 250 to 300 tons of domestic lead is reported to have been sold during the week under review at $5 95@6, and some as low as $5 90. The Government and Selby still hold for $6 35, but there is no telling how long they will continue to do so. Foreign lead is very quiet at $6 87½@6 90. Advices from the West mention that the shipment of 210 cars of bullion from Ogden, in December, of which little less than half were consigned to this market. During the first half of this month the shipments were in about the same proportions, while at present they are but about one-third of that amount, and will probably continue light for the next sixty days. This latter is the result of the severe weather interrupting transportation. The shipments in December and the first half of this month are unusually large for this season of the year.

Tin.—The market for pig tin is quiet, but quite firm at 22½c. for Straits; 21¾c. for L. and F.; 22c. for Refined English, and 26@26½c. for Banca. The London market is reported quiet and without change, the latest quotations being Straits, £92 10/@£93; L. and F., £98; Refined, £100. The market for tin plates is quiet, although there is a fair business doing in a jobbing way. I. C. charcoals are quoted at $10@$10 25; charcoal ternes, $9; coke tins, $7 87½@$8; coke ternes, $7 25—prices all gold. Messrs. JAMES & SHAKESPEARE, under date of London, January 8, say:

"Foreign descriptions are again firmer, and considerable activity prevails, but buyers continue to operate almost exclusively in Straits, of which a large quantity has changed hands during the past week, both on the spot and to arrive; and though the quotations for Australian have risen in sympathy with the general improvement, this latter sort is at present very much neglected."

Spelter and Zinc.—There is nothing doing in Foreign spelter, which is quoted at 7⅛c. for common Silesian, and 7¾c. gold for best. There have been from 75 to 100 tons of Western spelter sold at 6¾c. currency. There is more on the market for which bids are asked. Sheet zinc is quiet at 9c.@9¾c. gold.

Antimony.—This article is in light stock and quiet at 12¾c. gold.

Manganese.—N. B. Manganite, black oxide, 2¾c.; Virginia hard manganese, 2c.; Georgia soft manganite, 3c.

Quicksilver.—The prices in this city and San Francisco continue $1 65 and $1 55 per lb. respectively; while London has declined to £24 per flask of 75 lb. The consumption of quicksilver in the West is very large, and upon the increase; but with prospects of greatly-increased supplies from new developments, the market shows a tendency to decline a little.

FINANCIAL.

New York Stocks.

Jan. 27, 1875.

The transactions in the following list during the week ending to-day fully sustain the activity noted in our last. Prices have been rather irregular, with the tendency upward. The following are the quotations:

	Highest.	Lowest.	Closing
Pennsylvania Coal Co.	—	—	238
Consolidation Coal Co.	42½	42¼	42
Spring Mt. Coal Co.	—	—	—
American Coal Co	50	—	—
Maryland Coal Co.	—	—	16½
Cumberland Coal and Iron Co.	—	—	—
N. Y. & Nova Scotia Iron Co.	—	—	—
Del., Lack. & West. R.R. Co.	108¼	108	108⅛
New Jersey Central R. R. Co.	108⅝	107	107¾
Delaware and Hudson Canal Co.	113	111½	—
Quicksilver Mining Co. prefrd.	—	—	—
" " " Common	34	33⅝	33¼

Sales from the 22d to the 27th of January, inclusive, were as follows:

	Shares.	Price.
Del., Lack. and W. RR.	2,400 at from 108	to 108½
Del. and Hudson Canal	351 "	111½ " 113
New Jersey Central RR	1,160 "	107 " 108⅜
Quicksilver Mining Co.	800 "	33⅝ " 33¾
Consolidation Coal Co.	70 "	42¼ " 42½

Total Sales.....4,781 shares.

The following are the sales of bonds for the same period:

	Amount.	Price.
Del., Lack. & W. RR. convertible,	$19,000 at from	108½ to 109
N. J. Central RR. 1st consolidated mortgage bonds	20,000 "	103¾ " 103⅞
N. J. Cent. RR. conv'tible bonds,	9,000 "	106 " 106⅜

Philadelphia Stocks.

Jan. 26th, 1875.

The dealings in the various stocks during the operations of the past four days at the Philadelphia Stock Board have been principally confined to a few of the leading stocks. The market for the period under review has been steady, with no special feature of importance.

The Fulton Coal Company announces a dividend of 5 per cent., payable on the 27th inst.

The Locust Gap Improvement Company announces a dividend of 2 per cent., payable on the 27th inst.

Quotations are as follows:

	Highest.	Lowest.	Closing.
Reading R. R. Co.	56½	56	56¾
Lehigh Valley R. R. Co.	62	61⅞	61⅞
Little Schuylkill R. R.	48	—	—
Catawissa R.R.	21½	19¾	21⅛
" " Preferred	43⅛	42½	42
Huntingdon and B. T. R.R.	—	—	8¾
" " " Preferred.	16	15	15¾
Minehill R.R.	52¾	52½	—
Lehigh Coal and Navigation Canal...	51	50¾	50¾
Morris Canal	—	—	—
" Preferred	—	—	128
Pennsylvania Canal	—	—	—
Schuylkill Navigation Canal	—	—	7¾
" " Preferred	—	—	14½
Susquehanna Canal	—	—	7
Westmoreland Coal Co.	—	—	—
Buck Mountain Coal Co.	—	—	—

The following are the aggregate sales of stocks for the four days ending Jan. 26th:

	Shares.	Price.
Reading Railroad	2,443 at from 56	to 56¼
Lehigh Valley RR. Co.	869 "	61⅞ " 62
Little Schuylkill RR.	6 "	48 " ..
Catawissa RR	5,120 "	19¾ " 21¾
" " preferred	87 "	42½ " 43¾
Huntington and B. T. RR., p'f'd.	350 "	15 " 16
Minehill RR.	63 "	52½ " 52¾
Lehigh Coal and Navigation Canal.	22,352 "	50¾ " 51
Schuylkill Navigation Canal.	10 "	7½
" " " p'f'd	100 "	14½

Total sales.....31,400 shares

We note a sale of 100 shares of the St. Nicholas Coal Co. at $1 50 per share.

Sales of the various bonds for the period under review have been as follows:

	Amount.	Price.
Reading RR. debenture bonds	$5,300	at 80
" " R. G. M. 7s, coupons	2,000	" 104¾
" " new convertible 7s	3,400	from 104 to 104¾
Reading C. and I. Co. mortgage bonds,	22,000	at 87½
" " " " "		
Hartman & Myer Tract	2,000	" 87
Reading C. and I. Co. mort. bonds, Tamaqua Tract	6,000	" 88
Reading C. and I. Co. mort. bonds, St. Clair Tract	2,000	" 87½
Lehigh Valley RR. 6s, registered	3,000	" 103¼
" " " 7s	2,000	" 107¼
Lehigh Coal & Navigation Co. 6s, gold loan	3,500	from 100⅞ to 101
Lehigh Coal & Nav. Co. 6s, RR. loan.	22,600	" 98⅜ " 99
" " " " " 1884	3,100	" 100 " 100⅜
Schuylkill Nav. 6s, '72	9,744	" 93
" " 7 per cent. boat loan.	3,500	" 92

Gold and Silver Stocks.

SAN FRANCISCO, Jan. 27, 1875.

A very heavy decline has taken place in the San Francisco Stock Market, amounting in the aggregate to nearly 40 per cent. of the value of the list. The excitement in the market is described as being intense. One per cent. a day is readily paid for money to carry stocks. It is of course impossible to conjecture whether this remarkable fall is due to a discovery of the limits of the "*bonanza*" or to a *finesse* manipulation of the favorite stocks by speculators who desire to gain complete control of them. The Union Consolidated Co. have increased their number of shares to five for one; the comparative decline of this stock is accordingly $19 per share as compared with our last. The Washoe list is firm at our quotations. Raymond and Ely being $1 per share in advance of our last report.

Quotations, January 27, 1875:

Gould & Curry	29	Overman	74
Savage	85	Raymond & Ely	33
Chollar Potosi	56	Eureka G. V.	8
Ophir	150	Best & Belcher	53
Hale and Norcross	45	Kentuck	15
Crown Point	34	Meadow Valley	7
Yellow Jacket	88	Alpha	17
Belcher	44	Sierra Nevada	14
Imperial	11	Union Consolidated	12
Consolidated Virginia	515	Mexican	34
California	360	Caledonia	21

Copper Stocks.

BOSTON, Jan. 28, 1875.

The market for copper stocks during the past week has been quiet, and our quotations do not materially vary from those reported last week. We note a recent sale of 100 shares of the Franklin Mining Company at $6½ per share. Quotations are as follows:

Allouez	6	Pewabic	—
*Calumet and Hecla Co.	138¾	Phœnix	12
Copper Falls	10	Quincy	43¾
Central	27	Ridge	7
Franklin	—	Rockland	1

*Ex-dividend.

American Institute of Mining Engineers.

OFFICIAL BULLETIN.

Announcements to Members and Associates.

I. The ENGINEERING AND MINING JOURNAL, which is the Organ of the Institute, and contains its proceedings, transactions and notices of meetings, will be sent to each Member and Associate on the payment of his annual dues. Back numbers cannot, as a rule, be sent.

II. Dues (ten dollars per annum) are payable on election and at the annual (May) meeting. Members and associates elected at the February meeting pay ten dollars only to May of the following year. Remittances should be made, as far as possible, by P. O. Order, payable to the Secretary.

III. The Council earnestly requests members to forward to the Secretary, for preservation, copies of all printed mining and geological reports, particularly pamphlets, which may fall in their way. It is believed that by this means a large amount of valuable fugitive information concerning different regions and properties in this country, may be caught and preserved.

IV. Blank proposals for membership can be had on application to the Secretary.

V. The first volume of Transactions of the Institute will be sent by the Secretary to any address, on the receipt of five dollars.

VI. Members are earnestly requested to inform the Secretary promptly of any change of address.

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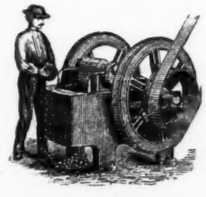

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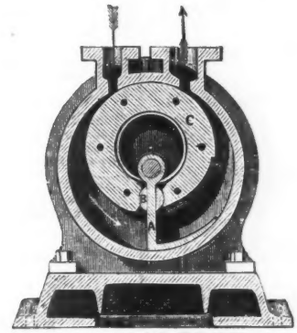

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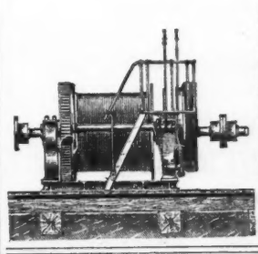

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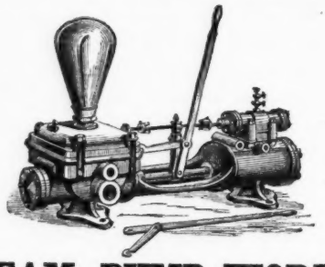

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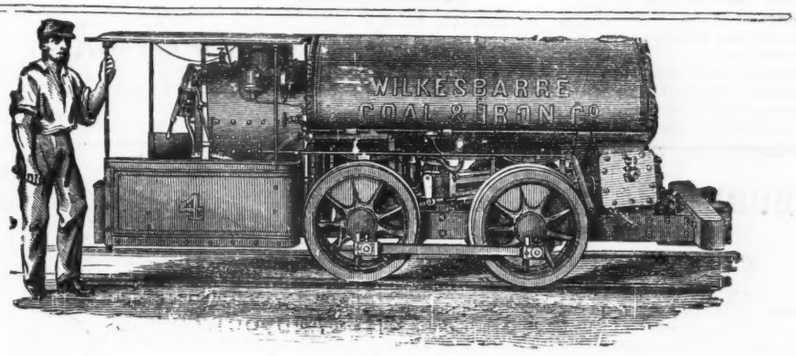

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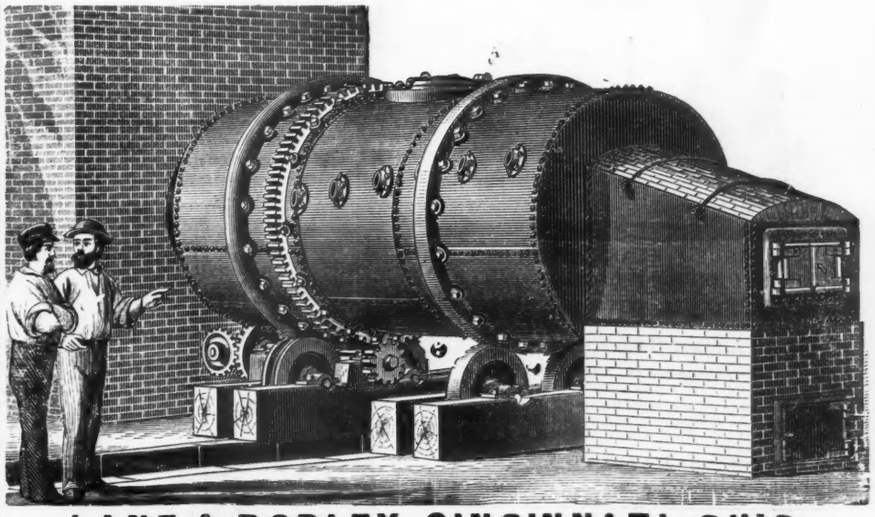

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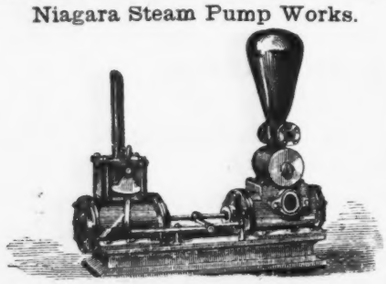

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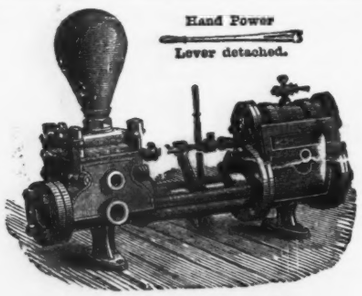

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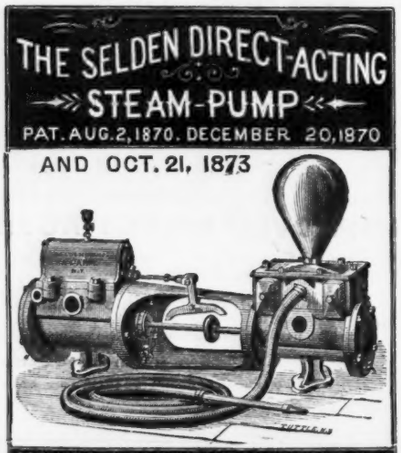
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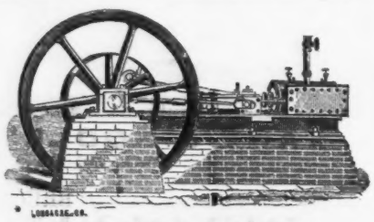

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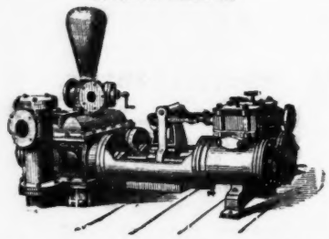

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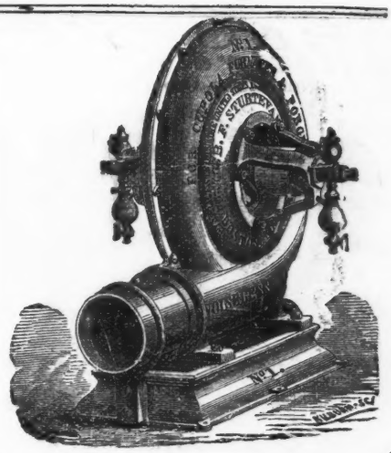
JOHN C. TRAUTWINE, Chairman.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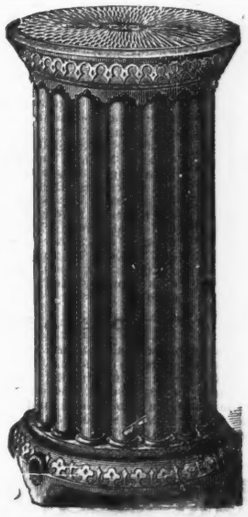
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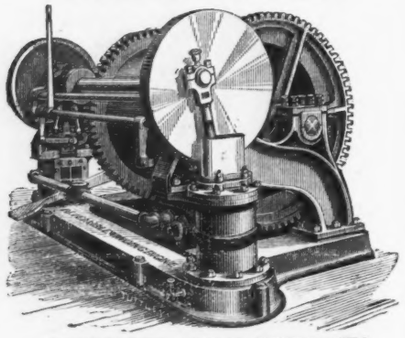

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☞ Look at following extract, Ingersoll Co.'s letter of excuses, ENGINEERING AND MINING JOURNAL, June 6, and compare with their advertisement: "I had *two* drills at the mine from the commencement, one beginning work on the 4th of April, the other on the 7th of the same month, and both drills working until the 1st of May." Signed, C. N. ELLIOTT, Superintendent Ingersoll Rock Drill Co.
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Second "	"	459	257	136
		918½	545	136

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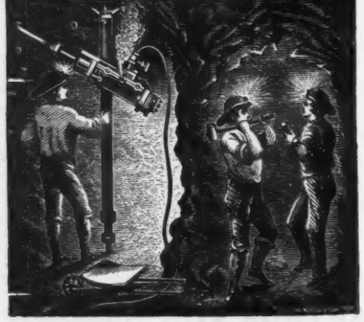
Comparison of Rock Drills at Port Henry Mines, New York.



First week with **ONE** Ingersoll drill.....288 feet.
Second week " " " " .....257 "
545 "
First week with **THREE** Rand drills.....459½ ft.
Second week " " " " .....459 "
918½ ft

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GEO. H. REYNOLDS, in his report of the trial of the
Rand, Ingersoll and Waring
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